همایش بین المللی غذای طیب

International Conference on Tayyeb Food

The book of

International Conference on Tayyeb Food

November 9-10th , 2022

(Contains full articles and abstracts of articles)

Organizers:

Research Institute of Food Science & Technology

Razavi Quality Institute

Mashhad University of Medical Sciences

ISC

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IN THE NAME OF GOD

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Chapter 1:

Introduction

About the Conference

The first International Conference on Tayyeb Food was held with the joint cooperation of Razavi Quality Institute, the Research Institute of Food Science and Technology and Mashhad University of Medical Sciences and with the permission of the Ministry of Science, Research and Technology on November 9 and 10, 2022. This conference aimed to present the latest scientific achievements and practical solutions to the relevant executive departments through the exchange of opinions of thinkers, researchers and managers of governmental and non-governmental organizations and institutions inside and outside the country in different areas.

In this conference, in addition to the keynote speeches given by domestic and foreign professors, 120 papers were presented in the form of full papers and 28 papers were presented in the form of abstracts, of which 128 were presented as posters and 20 papers were presented orally.

Also, the third festival of Tayyeb products and businesses, with the presence of 37 production units, was held at the same time as this event.

In addition to the mentioned cases, an educational workshop titled "Tayyeb Bazaar and familiarization with the implementation stages of Tayyeb Emblem" was held.

The participants in this conference were researchers, elites, university professors and students from all over the country, product manufacturers and service providers.

Tayyeb Emblem

A symbol of modern Islamic civilization

Tayyeb Emblem is designed based on the ontological foundations of Islam and its requirements that are applied in the form of process and system criteria on the applicant's products, services and organizations. This emblem has a significant distance from other quality emblems, including Halal emblem, and it is a manifestation of the Islamic lifestyle and one of the most significant products needed to realize the new Islamic civilization; In addition to these, Tayyeb 's standards also show the quality of the monotheistic attitude in directing science and technology. This influence can lead the flow of science and technology towards the Hayat Tayyebeh. The examination of Islamic texts (Quran, hadiths and supplications of the innocents) shows that the word "Tayyeb" can be the most suitable title for the quality standards of products, services and organizations for two main reasons:

- The word Tayyeb is an indicator and symbol of Tayyeb life; Hayat Tayyebeh is the highest quality level of life that is introduced in the Holy Quran.
- In Islamic sources, the word Tayyeb is used as an attribute of quality in various aspects of life, and in terms of meaning, it has the capacity to become a general standard of life.

The main characteristics of Tayyeb Emblem

- In designing the requirements for receiving this emblem, efforts have been made to use other standards and criteria used in quality awards at the national and international levels.
- The requirements of Tayyeb Emblem are process (from production to consumption) and comprehensive (with regard to all the components affecting the quality, even the human and spiritual components); as much as possible.
- Tayyeb Emblem has been designed and implemented in the form of models for quality assessment and ranking of products and organizations.
- By establishing Tayyeb Emblem, covered organizations and units can implement the cycle of growth and excellence (evaluation, finding problems, determining improvement points and proposing the process of excellence and progress).

Basic values

Tayyeb Emblem; It has a comprehensive approach and process towards the quality of products and services. This sign can be value-creating and identity-creating on a national and international scale. The most important values and goals of Tayyeb Emblem are as follows:

- Continuous improvement of the quality of life in the world community
- Taking advantage of creativity and innovation in order to realize a Hayat Tayebeh

- Paying attention to all dimensions of cultural, social and environmental responsibilities and rights
- Provision and protection of consumer rights
- Scientific authority in the field of quality
- Expanding monotheistic view of existence and promoting it in the form of lifestyle patterns

Quality canvas of Tayyeb

Quality canvas of Tayyeb is the most comprehensive model of quality. This canvas includes a basic theme, 5 main pillars, 20 components, 59 indicators and a significant number of quality evaluation criteria for each product or service. This canvas is designed in such a way that all quality requirements at product or service levels; It covers employees, work environment, living environment and cultural and social works. In the visual model below, a view of this canvas up to the fourth layer is shown.

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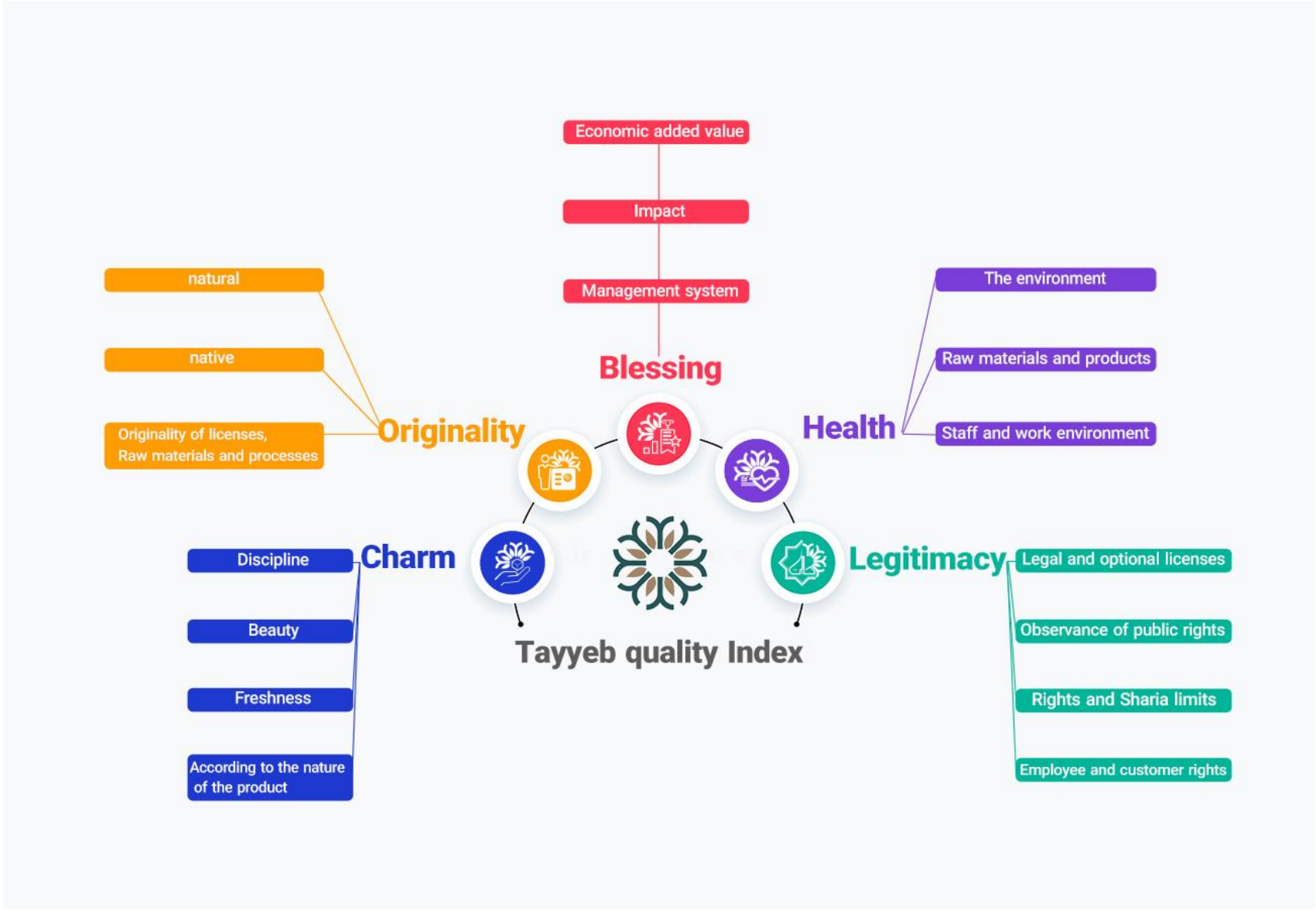
Economic added value
Impact
Management system
Blessing
natural
native
Originality of licenses, Raw materials and processes
Originality
The environment
Raw materials and products
Staff and work environment
Health
Discipline
Beauty
Freshness
According to the nature of the product
Charm
Legitimacy
Legal and optional licenses
Observance of public rights
Rights and Sharia limits
Employee and customer rights
Tayyeb quality Index

Conference organizers

Research Institute of Food Science and Technology

The Research Institute of Food Science and Technology as one of the research centers affiliated to the Ministry of Science, Research and Technology in order to respond to domestic specialized needs and considering the advantages of the eastern region of the country in the field of food industry, continues its activities as an independent national research institute. The vision of the institute is to be recognized as the most reliable applied research center in the country in the field of food science and technology and to have effective transnational interactions with an emphasis on Islamic-Iranian identity.

Razavai Quality Institute

The mission of Razavi Quality Institute is to improve the quality of life; The Qur'anic content of Hayat Tayyeb eh, the process and comprehensive index of Tayyeb quality, interactive and dynamic tools and systems of Tayyeb quality and quality measurement and Tayyeb ecosystem are the headlines of the institute's programs and projects. The institute pursues its programs with the help of strategic partners, network of colleagues, business partners and all those who step in the path of improving the quality of life.

Mashhad University of Medical Sciences

Mashhad University of Medical Sciences is one of Iran's public universities and one of the best universities of medical sciences in Iran under the Ministry of Health, Treatment and Medical Education in Mashhad. This university with 7 vice-chancellors and 18 health and treatment networks, 7 faculties, 28 hospitals and 16 research centers (4 centers approved by the ministry and 12 centers approved by the university) and in general provides health care services to about 5 million people.

Conference goals

- Introducing Tayyeb emblem as a symbol of quality and Iranian-Islamic lifestyle
- Explaining the indicators of Tayyeb food and its differences compared to other quality emblems
- Introducing infrastructures prepared for commercialization of Tayyeb emblem at national and international level
- Designing the international roadmap of Tayyeb emblem in cooperation with institutions and organizations active in this field
- Introducing Tayyeb emblem as one of the components of unity and convergence of Islamic countries
- Introducing Tayyeb emblem as a procedural and comprehensive model in evaluating and ranking products and services

The Message of the conference Chairman

The International Conference on Tayyeb Food is the first official event in the path of internationalization of the Tayyeb logo. This event, which will be held with the participation of national and international scientists and technologists, is a suitable platform for sharing and developing knowledge and technologies related to food quality while considering Tayyeb approach. The experience of commercializing the halal brand and the extent of its influence at the international level showed how effective and valuable the standards derived from Islamic rules can be for the people of the world. A closer look reveals that the word Tayyeb is the most appropriate title for the standards of products quality, services and whole life for two reasons:

- The word Tayyeb is an emblem of Hayat Tayyiba, and Hayat Tayyiba is the highest level of quality of life in the Holy Quran.
- The word Tayyeb has been used in various subjects indicating the highest level of quality.

According to the studies, the five principles of being halal, health, originality, blessing and attractiveness, which represent a comprehensive and procedural view on quality, have been considered to indicate Tayyeb food. Establishing this view along with production chains, especially food chains, can guarantee the health and safety of food, the living environment and the consumer community. Given the comprehensiveness of Tayyeb quality model, the development of this idea and emblem at the international level can bring a better identity and solidarity for Islamic countries and highlight their role in improving the quality of life of the human.

Dr.Mostafa Ghanei

President of the International Conference on Tayyeb Food
Biotechnology Development Council Chairman,
Professor of Baqiyatallah University of Medical Sciences

Conference topics

- **Basic and applied researche of Tayyeb food**
  - The production and processing of raw agricultural and livestock food products
  - Identifying and producing Tayyeb products
  - Nutritional value and healthful effects of Tayyeb food
  - Safety and quality control of Tayyeb food
  - The effects of Tayyeb on the society and the environment
  - Creating culture for Tayyeb food consumption
- **Tayyeb Food and Sharia**
  - The status of Tayyeb Food in different religions
  - Characteristics of Tayyeb food from the perspective of Quran compared to Halal food
  - Jurisprudential rules about the production and consumption of Tayyeb food
- **Economy of Tayyeb Food**
  - Trade, export and import
  - Supply chain
  - Tayyeb food branding
- **Rules and standards**
  - Rules and regulations for the production and processing of Tayyeb food
  - The status of Tayyeb food compared to Halal and organic food

Chapter 2:

Organization and supporters of the Conference

Policy council

Dr. Mostafa Ghanei	President of the International Conference on Tayyeb Food Biotechnology Development Council Chairman, Professor of Baqiyatallah University of Medical Sciences	

Members of the Policy Council

No.	Name	Workplace and expertise	Picture
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Scientific committee

Scientific secretary

1	Dr. Marzieh Razavizadeh Associate Professor Research Institute of Food Science and Technology	

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Executive committee

Executive secretary

Dr. Hossain Zamani Assistant Professor Research Institute of Food Science and Technology	

Members of the executive committee

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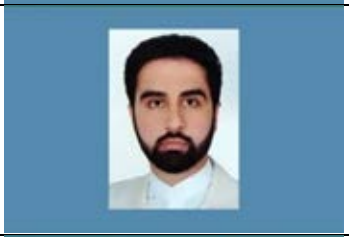
2	Dr. Mohammad reza Behnam	
3	Hossein Haghi	
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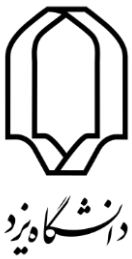

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Mashregh Zamin Zarin Saffron Inc

Scientific Association of Economic Regional Development of Iran

Nikudo Seafood

Vilavie

IKO Natural Beauty

Vit Makana

BesBite

PAfood

Chapter 3:

Keynote speeches and papers

Speeches presented

Speeches summaries

Halal and Toyyib Food: Issues and Challenges

Shuhaimi Mustafa[1,2] and Muhamad Firdaus Syahmi Sam-On[1]
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[2]Halal Products Research Institute, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia
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Abstract

Muslims follow the Shariah law and it is their obligation to consume only halal foods. The Holy Quran and sunnah, the two primary sources of Muslim faith, have mentioned very clear guidelines in the field of food. Generally, all foods are permitted except those mentioned clearly in the Holy Quran. Halal foods in its broader definition refer to foods that are permissible and wholesome. Currently, halal food markets valued trillions of dollars worldwide. This makes halal as one of the emerging international brands. Therefore, a clear understanding of halal will enable industries and religious authorities to produces and certify halal foods, respectively. Recently, the adoption of technology in the food production has advanced tremendously. Therefore, it is expected that the halal risks will also undeniably intensifying. Recent episodes of illegal halal labelling of meat products indicated that food fraudulent are reaching global scales. The demand for cheap and sustainable ingredients has led to the discoveries of superior compounds from animals that deemed non-halal by shariah law. Furthermore, the applications of modern processing and genetic engineering were proven to improve our capabilities to produce food. However, their halal issues such as ingredients in the culture medium, genetic engineering protocols and delivery mechanisms need to be addressed. Hence, credible halal certification and traceability mechanisms are indeed crucial and must be implemented.

The relation of waves, energy and Consciousness of the universe with the concept of Tayyeb

Bibi Marzieh Razavizadeh
Associate Professor Research Institute of Food Science and Technology

Abstract

The word of Tayyab mentioned in the Holy Qur'an means pure, healthy, in accordance with nature and taste, etc. Also, based on the research conducted on the characteristics of Tayyab, it has been concluded that Tayyab is based on the five principles of halal, health, attractiveness, blessing and authenticity. Now the question arises as to how to implement Tayyab and its principles in life. How can Tayyab be applied in life and what factors affect it? Are these factors spiritual or material and physical? In the science of epigenetics, which means the effect of the environment on the behavior and control of DNA, how can this effect be expressed? On the other hand, in the definitions of quantum physics, we have the basics that the world of matter is in exchange with energy, and when we look at the world in quantum dimensions, we see nothing except energy. This energy can be present everywhere in the form of consciousness. Now everything in the world is made of energy. So the energies interact with each other. Our thoughts, which are a type of energy, can affect our behavior and our environment. In fact, spreading these thoughts means emitting energy in the form of thought, and because the whole world is energy, these released energies affect other energies in the life. Our actions and behavior are the result of our thoughts and thoughts. Therefore, every thought that comes to our mind creates an energy field that spreads like a wave and affects and reflects other surrounding energies. Therefore, in this article, these issues have been commented on, and the relationship between these factors and the Tayyeb principles has been examined.

Latest Scientific Achievements & Practica Solution of the Halal Science Center Chulalongkorn University, Thailand

Wini Dahlan
Halal Science Center, Chulalongkorn University, Thailand

Headlines

1. Role of Halal Sci & Tech in Thailand´s Halal industry development.
2. More role of Halal Sci & Tech for integrity of Thailand´s Halal food /pharmaceutical products.
3. Updates of Thailand´s Halal standardization for manufacturing processes of Halal food/ pharmaceutical products.

Risk management in halal supply chains

Marco Tieman
Organisation: Senior Fellow, IPMI International Business School, Jakarta, Indonesia

Abstract

The Muslim world and its halal food industry have put itself in a very vulnerable position by its agrifood supply chain design. The Muslim world needs to redesign its supply chains urgently in order to avoid a total breakdown of its halal agri-food supply chains! Risk management practices by brand owners and their supply supply chain is found to have serious gaps, resulting in a defective halal assurance system and risk management. Companies and supply chain partners are not well prepared for halal incidents. This exposes brands to high impact integrity violations and damages to sales and corporate reputation. Halal risk management control consists of the halal assurance system, risk prevention, mitigation and recovery. Halal risk management should be rational and vary according to the halal supply chain risk profile. The halal supply chain risk profile of a company is determined by 5 main parameters. Finally, research and policy recommendations are proposed.

Halal Tayyib as a rational lifestyle for achieving compatibility

Jawad Alzeer
Swiss Scientific Society for Developing Countries, Zurich, Switzerland

Abstract

Building a compatible system between behaviour and lifestyle is crucial to creating a highly ordered system with rich potential. Food is an essential vital force needed to satisfy our organic needs. It serves as a source of energy and provides us with various building blocks. Many foods have regional, cultural and religious influences. Halal food is becoming one of the most important issues and an influential market in today's global economy. The main objective of Halal food is to ensure that the food is absolutely clean and safe and complies with Islamic Sharia law. Halal stands for the status of the substance, whether it is halal or not, while Tayyib stands for the process the substance goes through, whether it is clean or not. Therefore, hygiene and cleanliness are strongly emphasised in Islam and encompass every aspect of the people and equipment involved in the production of halal food. A transparent system of halal testing has been developed to ensure that a product that meets all halal requirements is produced safely and without suspicion. Future demand for halal products is high, creating a strong presence in developed and developing countries. Integrating the halal-tayyib principle into our daily lives creates potential and maintains a healthy system.

Assurance of Tayyib from a Food Safety Perspective in Halal Food Sector

Syed Fazal ur Rahim
Islamic Food and Nutrition Council of America, Faisalabad, Pakistan

Abstract

This paper puts forth how food safety and hygienic practices are a part of the Halal concept and should thus be adapted by the Halal food sector to achieve Halal and Tayyib assurance. It further puts forth the concept of Halal prerequisites, which were established through identifying food safety and hygiene requirements in Islamic Jurisprudence. To move toward more efficient Halal and Tayyib practices these should be demanded, implemented, maintained, and controlled by the whole Halal food sector, instead of just relying on the existence of food safety certification. A conceptual framework was constructed depicting the Halal sector's possible passive and potential active Halal and Tayyib food safety control practices. It will enable the sector to gain insight to issues in Halal certification, food safety position within it and reach an understanding of improvement measures. The paper also suggests recognizing and incorporating the Halal prerequisites and other sector specific requirements as Halal Control Points (HCPs) to the Halal HACCP system. Key Words Tayyib, Food safety, Hygiene, Halal, Haraam, Islamic Jurisprudence, HACCP, PRPs

Tayyiban Concept throughout Halal Meat Supply Chain

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Abstract

The word halal and tayyib have been stated frequently in the Holy Qur'an. Nevertheless, it's perception by numerous Muslims is shallow. Many understood that food is halal as long as it does not contain liquor or pork. Based on the language definition, the word tayyib has been translated as pure, good, healthy, safe, and wholesome, both in the physical and the ethical sense. The opposite of it is al-khabith which means something that is bad, impure, not perfect, and bring harms. The objective of this work is an attempt to highlight and elucidate tayyib concept throughout halal meat supply chain. The resources for this work are obtained from books, journals, articles, and others. Tayyib is a quality standard for meat and meat products which include all procedures such as animal welfare, preparation or processing procedures, and logistics that maintain the hygienic aspects of halal meat through the supply chain from source of origin to the consumption point. Welfare of animals in pre-slaughter handling as well as in other procedures depend on three key components namely; a) understanding of animals and their behavior (staff knowledge); b) environment or design of slaughter premises; and c) tools that are fit for purpose. Furthermore, preparation or processing include safety and hygienic procedures, storage, as well as transportation.

Key Words: Animal Welfare, Pre-slaughter Handling, Safety, Storage, Transportation.

An Etiological Approach to Obesity Management

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Abstract

Introduction Obesity is a heterogeneous complex disorder of multiple etiologies characterized by excess body fat that is contributed with several comorbidities which can be prevented or treated including diabetes, metabolic syndrome, cardiovascular diseases and obstructive sleep apnea. Obese patients need different obesity management due to their differences in where the fat is deposit (upper (android) or lower-body (gynoid) fat distribution) and also how that fat actually affects them in terms of metabolism, body shape and size. Our aim is to provide an etiological approach to obesity management.
Methodology A comprehensive electronic search was conducted utilizing several bibliographic databases (PubMed/MEDLINE, Scopus) using keywords including obesity, mental health and nutrition.
Findings/ Discussion Overfeed people varied in ability to gain or lose weight due to reasons such as metabolism rate, compliant patients, genetics and non-exercise activity thermogenesis. Thus, obesity assessment play an important role in treatment planning. What the patient is doing such as overeating and under moving as well as why they are doing them which is about behavior and drivers must be attended. Although food diaries and body analyzing help us to figure out obesity's causes, they are not enough. Recognition of drivers that influence behaviors are useful. Also, environment, culture, biology and psychology affect obesity treatment. Therefore, we recommend an etiological approach to a successful obesity management that includes 4 Ms. First, attention to mental health by using screening questionnaires and asking leading questions to diagnosis depression or social anxiety disorder. Second, noticing mechanical problems like knees or back pain for well-meant and efficient recommendations. Third, metabolic diseases such as lots of cancers, polycystic ovary syndrome and also drugs for treat them which can cause weight gain must be assessed. At the end, monetary health for example food insecurity, low income and expensive treatments are important. Moreover; obese patients face several considerable bias and stigma regarding psychological and social problems which reduces weight loss achievement. To conclude, in addition to an etiological approach to successful obesity management, a comprehensive evidence-based program including medical nutrition therapy, chronic disease management, if exist, psychological interventions, physical activity, pharmacotherapy and non-invasive and invasive interventions like surgery accompanied by a multidisciplinary team is needed.
Keywords: Obesity, Mental health, Nutrition

Safety evaluation of probiotics for human use

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Abstract

Food and agriculture organisation (FAO) of United Nations and World Health Organisation (WHO) defined probiotics as: Live microorganisms, which when administered in adequate amounts confer a health benefit on the host. Generally recognized as safe (GRAS) is an American Food and Drug Administration (FDA) designation that a chemical or substance added to food is considered safe by experts, and so is exempted from the usual Federal Food, Drug, and Cosmetic Act (FFDCA) food additive tolerance requirements. The International Scientific Association for Probiotics and Prebiotics, ISAPP, proposed that when combined with the specifications outlined by the FAO/WHO Working Group for the Evaluation of Probiotics in Food (2002), the key aspects of this definition should be more precise and in addition include the following aspects; A probiotic must be alive when administered, must have undergone controlled evaluation to document health benefits in the target host, must be a taxonomically defined microbe or combination of microbes (genus, species and strain level), must be safe for its intended use Currently three criteria are required for a prebiotic effect, Resistant to degradation by stomach acid, mammalian enzymes or hydrolysis, Utilisation (breakdown, metabolism) of the prebiotic by intestinal microorganisms and finally, selective stimulation of the growth and/or activity of beneficial microorganisms in the gut.

Keywords: probiotics, GRAS, Safety

The Effect of Food and Nutrition Literacy on Prevention of Childhood Obesity and Non-Communicable Diseases

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Abstract

Childhood overweight and obesity is associated with a higher risk of developing non-communicable diseases (NCDs) at a younger age, as well as premature death in adulthood. According to UNICEF/WHO/World Bank joint child malnutrition estimates database, in 2017, around 5.6% of children are overweight globally, while this prevalence is 3.2%, 5% and 6.1% in low, middle and high-income countries, respectively. The number of overweight children has increased the most in the lower middle-income countries. Even in developed countries that have a plateau prevalence of overweight and obesity, rates of obesity continue to increase among people of low socioeconomic status, due to growing economic and health inequities.
Food and eating habits as one of the main indicators of health and life style, have a very important role both in obesity and development and progression of non-communicable diseases.
Nutrition literacy (NL) is recognized as a key determinant of healthy dietary habits and nutritional status at the individual level, which can be defined as the capacity to obtain, process and understand nutrition information and the materials needed to make appropriate decisions regarding one's health.
Keeping these facts in mind that childhood obesity persists into adulthood and healthy eating habits, which are established during childhood will be likely maintained to adulthood, and on the other side childhood obesity is the main predisposing factor for non-communicable diseases, focusing of food and eating habits, in early childhood is absolutely mandatory.

Malnutrition in children with autism spectrum disorder

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Abstract

Autism spectrum disorder (ASD) is a neurodevelopment disorder characterized by difficulties with social interaction and communication, and by restricted and repetitive behavior. Children with ASD are at risk of nutritional problems that could impact growth and anthropometric indices over both the short and long term. Food selectivity and feeding problems are common in children with autism in association with their propensity for restrictive behaviors and interests. A nutritionally inadequate diet is more prevalent in children with autism than in other populations of children with special needs or developmental disabilities. The treatment of feeding problems in children with autism is complex and requires an interdisciplinary approach. A therapeutic program is consistent across multiple settings, considers what motivates the child, and takes into account the child's food preferences with particular attention to textures and tastes. Besides, mention to the specific micro and macronutrient is the other important factors in dealing with their needs.

Food waste management

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Abstract

Food waste is made up of materials intended for human consumption that are subsequently discharged, lost, degraded or contaminated. The problem of food waste is currently on an increase, involving all sectors of waste management from collection to disposal; the identifying of sustainable solutions extends to all contributors to the food supply chains, agricultural and industrial sectors, as well as retailers and final consumers. Food waste definition was provided for the post-harvest period of food ending when it comes into the possession of the final consumer. The generation of Food waste by the end consumer is caused by over- or non-appropriate purchasing, bad storage conditions, over-preparation, portioning and cooking as well as confusion between the terms “best before” or “use by” dates. The generation of Food waste at household level is influenced by a series of interconnected factors, mainly socio-demographic characters of the household, consumption behavior and food patterns. Avoidance of food waste generation could be ideally obtained by a proper equilibrium between food production and consumption, but such an optimum arranging is still far from being attained. A feasible management of excess production of edible food consists in its redistribution to feed poor people. The practice of food donation needs to find support from governments to facilitate the recovery and redistribution by food banks or social services. Agro-industrial residues and household food waste no longer suitable for human consumption can be used as feed stocks for the production of bio-plastics and bio-fuels together with the extraction of high-value components. This requires active participation from the public as well, in order to end up with a properly segregated Food waste to be transformed into resource. Practical and convenient solutions hand in hand with proper information campaigns targeted accordingly the area of interest need to be designed. Similar to the production of biofuel from virgin feed stocks, considerable debate surrounds the manufacture of bioplastics from natural materials, raising the issue as to whether they produce a negative impact on human food supply. In this context, the opportunity of using food waste as a feedstock in the production of bio-fuels and bio-plastics seems a feasible option. To conclude therefore, the interconnection of biotechnological processes in the co-production of bio-fuels and bio-products represents a key strategy aimed at maximizing the utilization of food waste and raising the potential income of the entire bioprocess chain. The present review aims to provide an overview of current debate on food waste definitions, generation and reduction strategies, and conversion technologies emerging from the bio refinery concept.

Key world: Food waste management, Prevention, reduction

Selected top papers

Cell-based meat (lab-grown meat): halal or haram?

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Abstract

Introduction: Food products suitable for Muslim consumers should be halal certified, particularly when their origins or production processes are doubtful. For example, meat products must abide by a number of requirements in relation to their preparation, condition and content to be considered halal. Cell-based meat is produced using animal cell culture technology, where meat is produced from animal cells using a combination of biotechnology, tissue engineering and synthetic processes. This technology does not reproduce the animal itself, but produces a product that is intended to resemble traditional meat from an animal, such as steak, minced meat, etc. Therefore, this research aimed at discussing the Islamic perspective on cell-based meat.
Methodology: In writing this review article, we searched in various databases such as scholar, article journal and websites based on the keywords including halal, haram, cell-based meat, lab grown meat.
Findings: Cell based meats are obtained by taking a portion of meat from the animal's body such as beef, chicken or fish, either when the animal was still alive or after it was dead. Under this process, we deemed it to be in accordance with the hadith of Prophet Muhammad PBUH about the ruling on limbs severed from the body when the animal was still alive. In a hadith narrated by Abu Waqid al-Laythi, Prophet Muhammad PBUH arrived in Medina and the people of Medina cut the camel's hump and goat's limbs. Then the Prophet said: Whatever is cut from a living animal is dead (and consequently, considered as unclean). Based on this hadith, there are two important points discussed by Islamic scholars. Firstly, eminent scholars agreed that if the body parts were cut off after the animal was slaughtered and dead, then the body parts were not considered a carcass and thus it is lawful to they be eaten. However, if the body parts were cut after it was slaughtered given that the animal was not completely dead, then the act is considered detestable, but the body parts were still considered clean and thus lawful to be eaten. Thus, in the issue of cultured meat, if the source of stem cells was taken after the animal is slaughtered, then the cultured meat produced is clean and lawful to be eaten because the source is lawful or halal. This ruling applies to all types of animals, be it four-legged, twolegged or animals with no leg. Secondly, fish and locusts are not included in this ban derived from the previous hadith because there are other hadiths stated that both are permissible. Therefore, if the carcass is lawful to be consumed, then any body parts being cut off are also lawful or halal. Therefore, any cultured meat originating from marine life is considered permissible even if the stem cells are taken when the marine life is still alive. Thirdly, Islam has set certain conditions in slaughtering, which covers the conditions of the animals, the slaughterer and tool used for slaughter.
Conclusion: The halal status of cultured meat can be resolve through identifying the source cell and culture medium used in culturing the meat. The halal cultured meat can be obtained if the stem cell is extracted from a (Halal) slaughtered animal, and no blood or serum is used in the process.

Keywords: Cultured meat, Halal, Lab grown meat, Islamic view

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Meta-synthesis of the semantic studies of Tayyib in the Holy Quran

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Abstract

Tayyib is one of the words that has been used a lot in the Holy Quran and Islamic traditions. Islamic scholars and scholars have long spoken about its meaning in their interpretive and jurisprudential works. But in the last decade, the growing interest of scientists and researchers in recognizing the meaning of Tayyib has increased, especially in the Holy Quran, so various articles, books, and dissertations on its semantics have been written. It is natural that every researcher has made an effort on the semantics of Tayyib based on his own method. In the meantime, various views have been presented on the semantics of Tayyib, which in some cases have led to the confusion of other scholars, especially those who specialize in interdisciplinary studies of the Qur an and the humanities and natural sciences. In order to reduce this damage, in this article, an attempt has been made to examine the works produced on the semantics of Tayyib by the meta-combined method, and after triple coding and obtaining documented and valid analyzes, in a methodical and scientific manner, a comprehensive view. And the barrier to good semantics should be presented and the question should be answered what are the main elements and components of good semantics from the point of view of the Holy Quran based on the produced scientific works?

Keywords: Extracorporeal method, the semantics of Tayyib, Tayyib, elements of Tayyib, interpretation of the Holy Quran

Tayyeb brand gap analysis in the introduction stage of life cycle in the domestic market

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Abstract

Tayyeb brand has been introduced with the aim of supporting Muslim consumers by implementing a food chain based on Islamic principles in all stages of the chain. Brands are closely related to emotions and beliefs, especially when it comes to religion. Any deviation of the desired brand values from the customers' feelings and perceptions leads to a gap between the two that is related to the brand gap. Understanding the brand gap and its reasons helps brand owners in setting strategies and increasing the quantity and quality of brand life. In this article, the evaluation of different aspects of the brand has been done by completing a five-point Likert questionnaire by 130 people in the spring of 1401S.H. Analysis of collected data with descriptive tools and non-parametric Friedman test, showed that the maximum brand gap was observed in the customer aspect of brand. Therefore, it was suggested that customer-oriented approaches be considered in the design and diversification of products, the order of supply to the market, and the characteristics of adaptation to the Muslim lifestyle.

Keywords: Tayyeb brand , Brand gap , Non-parametric Friedman test

Presented abstracts

A: Posters presentation

B: Oral presentations

Presented abstracts

A- Posters presentations

A1- Laws and standards

Ways to detect halal food fraud: A systematic review

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Abstract

Introduction: In recent years, increasing cases of fraud and mislabeling of animal products have attracted considerable attention and concern among consumers and regulatory agencies. Consuming and using halal consumer goods is common among Muslims. Muslim communities are not allowed to consume any product that contains non-halal ingredients. Currently, there are many food products in the world where the actual content of these products is not known. The purpose of this study is the identification methods of non-halal food components and compounds in halal food products.

Method: The databases PubMed, Scopus, google scholar, Science Direct, and SID were searched for studies published from 1970 to 2021. The Keywords included "Halal", "Food", "Fraud", "product", "Authentication". In total, 87 scientific papers were analyzed in this study.

Finding: Examining the results of the articles, we find that the consumable components of pork (meat, fat, blood, and gelatin) have the highest probability of fraud in halal products. Although, other frauds in food and beverages should not be ignored, such as alcohol and methanol in beverages, wild boar meat, and cat and mouse meat.

Conclusion: There are methods to detect this type of fraud, and it is important to choose the best method to detect this type of fraud, considering things such as cost, time, and other effectiveness indicators. Among the methods of identifying counterfeits in halal products, molecular methods (based on the genome), electrical spectroscopy, high-performance liquid chromatography (HPLC), polymerase chain reaction, and other methods can be mentioned. Molecular methods are highly accurate for detecting food fraud, and for this reason, they have the highest percentage of detection.

Keywords: Halal, Food, Fraud, Authentication, Diagnosis

A2- Fundamental and practical research

The effect of pectin based edible coating (with and without antioxidant) on lycopene content and color characteristics of hot air dried tomato.

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Abstract

Introduction: Nutritionally, tomato is a rich source of antioxidant compounds such as β carotene, lycopene, ascorbic acid, and phenolic compounds (Georgé et al., 2011). Tomato is highly perishable and drying is the oldest and the most effective method for increasing its shelf life. Drying under different processing conditions causes degradation of the different amount of lycopene and makes different color properties (Tahmasebi & Emam‐Djomeh, 2021). Sulfur dioxide is the most prevalent pretreatment before tomato drying which its residues in the final product could have adverse effects on health (Sakooei-vayghan et al., 2020). Since in recent years the demand for the production of high quality and safe products has increased therefore in this study the effect of edible coating based on pectin (with or without antioxidant) on the lycopene content and color properties of tomatoes dried by hot air has been investigated.
Material and methods: In this study, the effect of tomato slices coating by pectin based edible coating (with and without antioxidant agents) was investigated on the lycopene content and color properties of hot air dried tomato and compared with sulphureted and control (without any pretreatment) hot air dried samples. Citric acid (CA) and ascorbic acid (AA) were used as antioxidant compounds. Tomato slices with a thickness of 5 cm were immersed in a pectin solution with and without CA and AA, then dried by a hot air drier at temperature of 65 C° in air velocity of 1.5 m/s.
Results: The results revealed that active pectin coating (with CA (49.21± 1.2 mg/100 g dry matter) or AA (48.31± 2.5 mg/100 g dry matter)) as well as sulfuring pretreatment (47.82± 1.6 mg/100 g dry matter) significantly ($p<0.05$) improved the preservation of the lycopene content of hot air dried tomato compared to control samples (36.87± 2.7 mg/100 g dry matter). Also, all of pectin coated samples showed significantly less changes ($p<0.05$) in color properties in comparison with control samples ($\Delta E= 24.70 \pm 2.3$). Similar results were reported by Babiker and Eltoum (2014). The same manner in the color changes was seen for both sulphureted ($\Delta E=17.12\pm 1.6$) and pectin + CA coated ($\Delta E=16.25\pm 2.5$) samples.
Conclusion: Active edible coatings can be used as a pretreatment for the drying process since they act as a barrier against oxygen penetration and protect active biologic compounds from oxidation. Also, edible coatings can be suitable substitution for sulfuring in the drying process
Keywords: Dried tomato, Edible coating, Lycopene

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Health-giving effects of camel milk on diabetes mellitus treatment

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Abstract

Introduction- Diabetes mellitus is a set of metabolic disorders characterized by chronic increase of blood glucose levels and impairment in metabolism of carbohydrates, fats, and proteins. The patients have a trouble in the production of insulin or response to it, or both. It is predicted that the worldwide prevalence of diabetes mellitus in 2030 increased to 4.4%, and the total number of people with diabetes will reach 366 million. Over the years, the usage of natural remedies along with pharmacological interventions in controls and treatment of diseases, mostly about diabetes, has always been considered. Camel milk contains significant amounts of minerals (Na, K, Fe, Cu, Zn, Ca, P and Mg) and of large value of immunoglobulins (G and A), vitamins (A, B2, C and E), lactoferrin, lactoperoxidase, which can be used as a good nutrient source for humans. Also, it contains less amount of short-chain fatty acid and a high concentration of long-chain fatty acids. oral administration of insulin destroys it in the acidic medium of stomach. Therefore, proper treatment of diabetes includes insulin injections as continuously to maintain blood glucose level. Camel milk contains bioactive insulin like proteins (about 52 U/L), that mimic insulin interaction with its receptor which does not form coagulum in the acidic media of stomach. The present study is aimed to evaluate anti-diabetic effects of camel milk on glucose homeostasis.

Methodology- The present review article was completed by searching "Pubmed" and "Google scholar" by different combinations of terms from the list of MeSH "diabetes" and "camel milk". We searched databases from 2015 until the end of September 2022.

Findings- Camel milk administration can have positive effects on glycemic control, by reducing fasting blood sugar, significant decrease in HbA1c levels and improving lipid profiles in diabetes patients. The fatty acid composition of the camel's milk, has a significant amount of Oleic acid, which is a MUFA, and could possibly have a role in reducing insulin resistance in patients with diabetes. The other specific factor is that the camel milk fat has low short chain fatty acids with a number of 4 to 12 carbons. It has been shown that diet with short chain fatty acids can significantly rise triglyceride, cholesterol, and free fatty acids in the plasma and create a state of insulin resistance throughout the body.

Conclusion- Camel milk and some its effective components influence insulin secretion by effect on the pancreatic β-cells and stimulate insulin receptor function in the insulin-sensitive tissues without any anti-genetic effects. In most studies, the recommended dose of camel milk was 500 mL/day which led to improvement of diabetes markers after 3 months in diabetes patients.

Keywords: Camel, Milk, Diabetes, Insulin

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Evaluation of Honey Health from the Perspective of Pesticide Residues

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Abstract

Introduction- Honey is an outstanding wholesome natural product possessing excellent nutritional value, Iran is among the countries having the highest number of beehives worldwide. According to global statistics, Iran is the fourth largest honey producer in the world with an annual production of 76,000 tons. Generally, honey bee and all its products such as pollen, wax, and particularly honey are potential natural indicators of environmental pollution, and might be regularly used for biomonitoring of contamination, since they provide miniature samplers (Tette, 2016).

Material and Methods- A multi-residue method was developed for 56 pesticides from different groups, encompassing the most widely used pesticides in Iran. 64 samples of honey were randomly collected from different regions of Iran and extraction was performed using validated QuEChERS method. Next, pesticide residues were identified and measured using optimized UHPLC-MS/MS, GC-ECD and GC-MS analysis (Eslami, 2021).

Findings- Results indicated that the observed pesticides in honey samples were approximately 68% of the total studied pesticides, most of residues belonged to the group of insecticides. Chlorpyrifos, clothianidine, cyromazin, primicarb, diazinon, ethofumesate, phosalone, coumaphos and lindane were the most frequently observed pesticides found in honey samples, exceeding EU MRLs (0.01 mg/kg). Eventually, the human health risk assessment was performed for children and adult consumers based on Monte Carlo simulation(Mahdavi, 2022). Results revealed that although pesticide residue levels were relatively high, the risk factor did not exceed the allowed limits and hence the consumption of Iranian honey would not pose a threat to human health.

Conclusion- The rank order of pesticides based on HQ was lindane>diazinon>chlorpyrifos> cyromazin>phosalone>clothianidine>pirimicarb>ethofumesate for honey samples. In our study, the calculated hazard index (HI) for adults (0.13) and for children (0.36) lower than 1, suggested no potential health risks to the honey consumers. All pesticides except for lindane did not pose a cancer risk to humans, unfortunately due to lindane residue as a POPs pesticide, CR (2.47×10^{-5}) was between 10^{-4} and 10^{-6}, controlling plans should be conducted to decrease the concentration of this pesticide in Iran.

Keywords: Pesticide residue, Honey, Health risk assessment, UHPLC-MS/MS, GC-ECD

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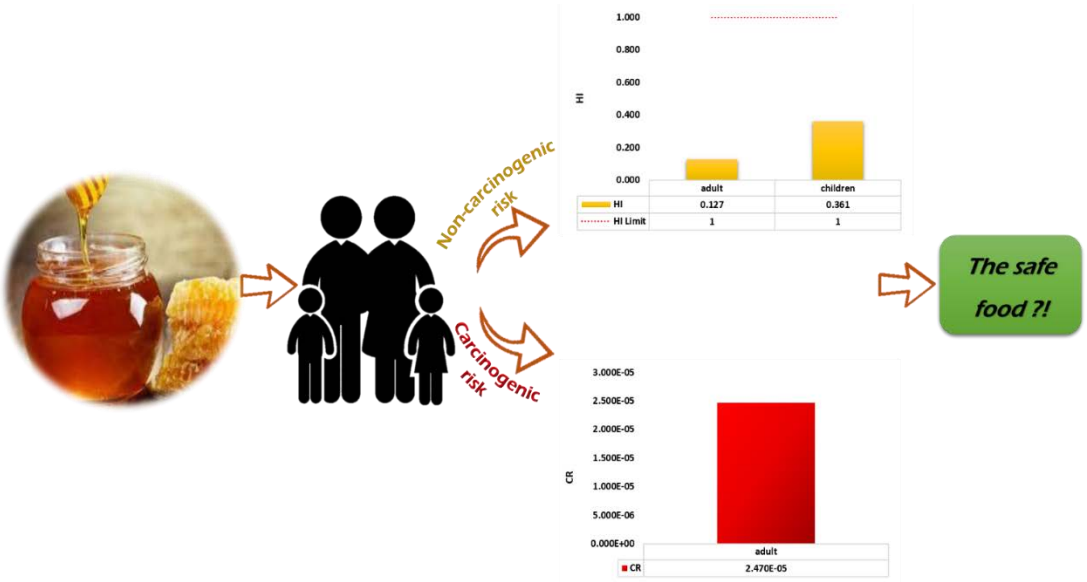

Management and Prevention of Parasitic Zoonotic Infections in Tayyeb Foods

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Abstract

Introduction
Although parasites have been evolving with man since antiquity, the control and eradication of these diseases are still far from being achieved. They are more frequently reported in the literature as causative agents of food and waterborne illnesses. Several parasites are important agents of diseases transmitted through Tayyeb foods. Parasitic agents are found in many herd animals such as cows, sheep, goats, gazelle and deer. We must know how food could be contaminated, the best storage methods for keeping food safe, and the principles of fighting against germs and pathogenic agents. We should promote public education about ways to prevent food-borne diseases. Also, we must increase coordination and participation of private and government sectors for laboratory diagnosis. This article aims to investigate meat's most important parasitic diseases.

Material and Methods
The best ways to prevent these pathogens must be analyzed to reduce massive destruction. Three databases (Google Scholar, PubMed and Scopus) were searched for published articles on parasitic zoonotic infections in Tayyeb foods in Iran from 2000 to 2020. Twenty related articles with complete abstracts were included in this study. All data were analyzed with R version 4.2.1 artificial intelligence software.

Findings
Parasitic diseases transmitted through meat include a wide range of zoonotic diseases, the most important of which are helminths like; *Echinococcus granulosus*, *Anisakis simplex*, *Fasciola* spp*,* and also protozoan like*; Giardia*, *Toxoplasma* and *Sarcocystis*, which are very important in terms of health. Even though the food production factories observe the food health control standards, it is necessary for all the people who are involved in the food storage and distribution stages to strictly follow the hygiene principles.

Conclusion
To prevent parasitic zoonoses, the food must be cooked completely, and hygiene principles and correct food storage methods must be followed to avoid re-contamination. Meat inspection and personal hygiene should be taken seriously, especially for those involved in food preparation (transportation, processing and cooking). Kitchen cleanliness is of great importance; food should be kept away from the reach of insects, rodents, and other animals.

Keywords: Parasite, Zoonosis, Prevention, Meat

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Isolation and identification of lactic acid bacteria in beetroot juice

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Abstract

Introduction- The consumption of fruits and vegetables and their beverages has always been of interest to consumers due to the presence of nutrients such as minerals, vitamins, and antioxidants. Since carbohydrates are present in fruit and vegetable juices, it has made them a suitable environment for the growth of lactic acid bacteria, so this study was performed to isolate and biochemically identify lactic acid bacteria from beetroot juice.
Material and Methods (Or Methodology)- Beetroot juice was prepared from two kilograms of beets washed with a cold press. Sterile samples of beetroot juice were first enriched in MRS broth and then cultured on MRS agar. Gram and catalase tests were used for the initial detection of lactic acid bacteria. In the following to identify the species of lactic acid bacteria, biochemical confirmation tests such as the melting of gelatin, the ability of bacteria to grow at 15 and 45 ° C, sugars fermentation, gas production from glucose, and growth in salt with different concentrations were performed. The final verification of species was done using polymerase chain reaction (PCR).
Findings- All isolates formed creamy white round colonies on MRS agar medium, were gram-positive, and were able to grow in anaerobic conditions, they were also rod-shaped and catalase-negative, which based on biochemical and molecular tests, four types of lactic acid bacteria (*L .plantarum, L. helveticus, L. salivarius, L. acidophilus*) have been identified.
Conclusion- The findings of this study indicate the presence and diversity of lactic acid bacteria in beetroot juice which can be a potential substrate for the production of probiotic products.
Keywords: Lactic acid bacteria, beetroot juice, isolation, biochemical identification, polymerase chain reaction (PCR)

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An overview of the methods of creation, isolation, and identification of postbiotics

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Abstract
Introduction- Research on postbiotics has shown that direct consumption of postbiotics can have more benefits compared to probiotics. The term postbiotic does not only refer to inactive bacteria, but also to soluble metabolites that are secreted by living bacteria or released from their structure after the lysis of the bacteria. The purpose of this article is a brief overview of the preparation, isolation, and identification methods of postbiotics for use in the food and pharmaceutical industries.
Material and Methods (Or Methodology)- In this review study, data related to keyword searches were collected in Google Scholar, Web of Science, ScienceDirect, PubMed, and Scopus databases. All articles related to experimental studies were included in the study, and articles without complete and unrelated texts were excluded.
Findings- In the food industry, postbiotics can be produced using two natural and laboratory (physical and chemical) methods. One of the most important methods of producing postbiotics in a natural form is the fermentation process, in which prebiotic compounds are provided to the microorganisms involved in the fermentation process and some postbiotics are produced. By using various laboratory methods, postbiotics can be produced in a purer form with higher performance. For example, physical methods such as mechanical breaking, heat, gamma or ultraviolet rays, high hydrostatic pressure, ultrasonic waves, or chemical methods such as inactivation by acid can be used. In addition to destroying and inactivating bacterial cells, extraction postbiotics by solvent and sonicator can also be used. After that, steps such as centrifugation, dialysis, and freeze drying are also used to increase the efficiency of the production and storage of these compounds. Postbiotics can be identified both quantitatively and qualitatively. Proton nuclear magnetic resonance spectroscopy or Fourier transform ion cyclotron resonance mass spectrometry can be used to identify postbiotics.
Conclusion- These side products provide specific physiological effects to the host by providing more biological activity, and because of their unique characteristics, the method of creation, isolation, and identification of postbiotics is important.
Keywords: postbiotics, methods, creation, isolation, identification
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An Etiological Approach to Obesity Management

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Abstract

Introduction Obesity is a heterogeneous complex disorder of multiple etiologies characterized by excess body fat that is contributed with several comorbidities which can be prevented or treated including diabetes, metabolic syndrome, cardiovascular diseases and obstructive sleep apnea. Obese patients need different obesity management due to their differences in where the fat is deposit (upper (android) or lower-body (gynoid) fat distribution) and also how that fat actually affects them in terms of metabolism, body shape and size. Our aim is to provide an etiological approach to obesity management.

Methodology A comprehensive electronic search was conducted utilizing several bibliographic databases (PubMed/MEDLINE, Scopus) using keywords including obesity, mental health and nutrition.

Findings/ Discussion Overfeed people varied in ability to gain or lose weight due to reasons such as metabolism rate, compliant patients, genetics and non-exercise activity thermogenesis. Thus, obesity assessment play an important role in treatment planning. What the patient is doing such as overeating and under moving as well as why they are doing them which is about behavior and drivers must be attended. Although food diaries and body analyzing help us to figure out obesity's causes, they are not enough. Recognition of drivers that influence behaviors are useful. Also, environment, culture, biology and psychology affect obesity treatment. Therefore, we recommend an etiological approach to a successful obesity management that includes 4 Ms. First, attention to mental health by using screening questionnaires and asking leading questions to diagnosis depression or social anxiety disorder. Second, noticing mechanical problems like knees or back pain for well-meant and efficient recommendations. Third, metabolic diseases such as lots of cancers, polycystic ovary syndrome and also drugs for treat them which can cause weight gain must be assessed. At the end, monetary health for example food insecurity, low income and expensive treatments are important. Moreover; obese patients face several considerable bias and stigma regarding psychological and social problems which reduces weight loss achievement. To conclude, in addition to an etiological approach to successful obesity management, a comprehensive evidence-based program including medical nutrition therapy, chronic disease management, if exist, psychological interventions, physical activity, pharmacotherapy and non-invasive and invasive interventions like surgery accompanied by a multidisciplinary team is needed**.**

Keywords: Obesity, Mental health, Nutrition

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Contributing factors in food-related campylobactriosis cases: A systematic review

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Abstract

Introduction- Campylobacter species, especially Campylobacter jejuni and Campylobacter coli are common causes of bacterial gastroenteritis even in the developed world(1). the transmission to humans is mainly through the fecal-oral route, which 50 - 90 percent of them is related to the consumption of poultry meat)2(. .Although campylobacter infection usually presents as a simple gastroenteritis, it can become complicated in some people(3). It should be noted that the burden caused by campylobacter infection is high and a lot of money is spent on them every year (including doctor's fees, medicine, etc.)(4). this article intends to conduct a systematic review on Contributing factors in food-related campylobactriosis to investigate their increasing trend globally.
Material and Methods- : A systematic review was conducted at PubMed, Science Direct, Scopus, and Google Scholar to identify all studies published between January 2000 and September 2022 with the search keywords of "gastroenteritis," "Campylobacter," and "Campylobacterosis". In total, 43 case report article were analyzed in this study.
Findings- According to the case report studies, the main cause of Campylobacter infection is due to contaminated food that is uncooked, human-to-human contact and human-to-farm or pet animals. Also, it is mainly in the form of gastroenteritis with symptoms such as diarrhea, fever, and abdominal pain and it is rarely complicated in people with a weak immune system and causes diseases such as pericarditis, primyocarditis and meningitis.
Conclusion- Inadequate surveillance and lack of standard methods for control campylobacteriosis in the poultry sector, the main source of Campylobacter transmission to humans, contribute to increasing the prevalence of Campylobacteriosis. Further research on rapid detection methods and focus on control and prevention factors can help reduce Campylobacteriosis.

Keywords: gastroenteritis, Campylobacter, Campylobacterosis

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Strategies for food waste management to improve sustainable development

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Abstract

Introduction: According to the report of Food and Agriculture Organization (FAO), about 1.3 billion tons or one third of the foods produced around the world wasted or lost throughout the food supply chain from farm to final household consumption. Sustainable agriculture, nutritional challenge, and food loss and food waste are three components of a sustainable food system entitled the Food Sustainability Index (FSI). Food waste related issues in developing countries is currently considered to be a major threatening factor for sustainable development and food waste management systems. So that, we aim to recommend several methods for food waste management and improve sustainable development especially in the developing countries.
Material and Methods: The comprehensive literature search was performed in electronic databases including MEDLINE (PubMed), Scopus, ISI web of Science, and Google scholar, up to August 2022. The review and observational study studies that reported food waste, FSI, and sustainable development were included in the current systematic review.
Findings: Food waste is considered as food produced for human consumption but has scraped or was not consumed
by humans. Inappropriate food conservation in storage level, caring for pet and avoidance of leftovers in consumption level, over-preparation in preparation level, and excessive purchase in stocking and buying levels are considered as antecedents of household food waste. Several strategies have been suggested to decrease food waste generation including correction of cooking and eating behavior, food waste separation or composting behavior, improving consumers' knowledge of food waste, improving consumer's environmental awareness, and determining government policy on management of reducing food waste.
Conclusion: The current study suggested that increasing knowledge and awareness of consumer about food waste management and updating government policies to reduce food waste create opportunity in handling the production of food waste and moving toward the sustainable development goal to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture".

Keywords: Food waste, Food Sustainability Index, Sustainable development

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Management and Prevention of Bacterial Zoonotic Infections in Tayyeb Foods

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Abstract

Introduction
According to the report of the World Health Organization, more than 2 million people die every year due to the use of contaminated food and water, and most of these victims are children because their immune system is weaker than that of adults. The most important sources of food contamination are uncooked meat. We must know how food could be contaminated, the best storage methods for keeping food safe, and the principles of fighting against germs and pathogenic agents. We should promote public education about ways to prevent food-borne diseases. Also, we must increase coordination and participation of private and government sectors for laboratory diagnosis. This article aims to investigate meat's most critical bacterial infections.
Material and Methods
The best ways to prevent these pathogens must be analyzed to reduce massive destruction. Three databases (Google Scholar, PubMed and Scopus) were searched for published articles on zoonotic bacterial infections in Tayyeb foods in Iran from 2000 to 2020. fifteen related articles with complete abstracts were included in this study. All data were analyzed with R version 4.2.1 artificial intelligence software.
Findings
Microbiologists are being challenged as foodborne outbreaks are increasingly being observed worldwide. Most of these outbreaks are associated with bacterial pathogens such as *Campylobacter*, *Salmonella*, and *Escherichia coli*. Although the food production factories follow the food health control standards, everyone involved in food storage and distribution must strictly follow the health principles. We should prepare a suitable method for food processing, including fully cooked food and consuming it as soon as possible, carefully storing cooked food, avoiding contact with raw food, and heating it thoroughly when using it again.
Conclusion
Meat inspection and personal hygiene should be taken seriously, especially for those involved in food preparation (transportation, processing and cooking). It is also better to get food from reputable centers. Food must be cooked completely to prevent the growth and proliferation of bacteria. After cooking, hygiene principles and proper food storage methods must be observed to avoid re-contamination.
Keywords: Bacterial, Zoonosis, Prevention, Meat

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Is the Tayyeb brand awarded to Single Cell Protein?

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Abstract

Introduction-Single-cell protein (SCP) is the protein extracted from cultivated microbial biomass that can be used as a protein supplement for both humans or animals and offers an alternative proteinaceous food sources to solve protein deficiency problem being faced by the entire humanity. However, there have been concerns about possible risks such as alimentary allergies, toxins, nucleic acids and indigestible fibers. So, it can give rise to bioethical issues for consumers, particularly Muslims. For a Muslim food must meet the criteria of Islamic jurisprudence such as Halal and Tayyeb. Halal is an Arabic word that means “Permissible” according to Islamic rites. on the other hands, Tayyeb Means “Purity” in word and the foods must have several characteristics that are classified as Tayyeb food, included nutritious and safety, being halal, originality, attractiveness and blessing. So Tayyeb is considered as a food beyond Halal, which includes all spiritual and nutritional aspects. Considering safety is one of the most important aspects of Tayyeb food, and on the other hand, there are concerns about the possible risks of SCP consumption, the question is whether this protein alternative can be Tayyeb or not? The aim of this paper is to answer this question.
Material and Methods (Or Methodology)- related articles from 2010 to 2022 were searched in Google Scholar, PubMed, Web of Science databases. Among the 13 articles found in this regard, 8 related papers were used.
Conclusion - Large amount of SCP can be produced by microorganisms due to their fast growth rate on agricultural and industrial wastes. Beside proteins, SCP contains carbohydrates, nucleic acids, lipids, minerals, vitamins and several important amino acids. So, it can be an effective alternative for more expensive protein sources such as fish, meat products and soymeal. Nowadays, removal of nucleic acids, toxins and other possible risks from SCP as well as its high nutritional value, have turned it into a safe and healthy product. Therefore, the Tayyeb brand can be awarded to Single Cell Protein if it has other characteristics of Tayyeb food.

Keywords: Single Cell Protein, Nutritive value, Protein alternative, Tayyeb

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The role of bioactive peptides as nutraceutical in food health promoting

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Abstract

Introduction- Bioactive peptides (BP) are low molecular weight protein fragments of 2–20 amino acids residues that exhibit beneficial physiological effects in human. BP as the new generation of biologically active regulators; have hormonal or pseudo-pharmacological activities, which are classified into antimicrobial, antithrombotic, antihypertensive, opioid, immunotherapeutic, and antioxidative groups, thus increasing the quality of life. In Islamic lifestyle, Tayyeb is the highest level for food quality which has 5 aspects included nutritious and safety, being halal, originality, attractiveness and blessing. So, focus on high nutritional value of foods that can guarantee the health of the consumer is important. Use of food products with bioactive peptides or the isolated and purified BP from food proteins as additives can provide the nutritious and safety aspect of Tayyeb products. Numerous bioactive peptides have been reported in recent years as naturally present or generated from food proteins of different origins like milk, eggs, soya, fish, and meat. BPs remain inactive while the sequences are kept within the parent protein and they active once released by enzymatic hydrolysis by peptidases during gastrointestinal digestion and/or during food processing such as fermentation.
Material and Methods (Or Methodology)- related articles from 2010 to 2022 were searched in Google Scholar, PubMed, Web of Science databases. Among the 18 articles found in this regard, 8 related papers were used.
Conclusion - Nowadays, there is an increasing commercial interest in the production of BP from various sources due to the wide range of health-promoting properties of biopeptides and this fact that BP have the potential to be used as food additives and ingredients of pharmaceuticals for the treatment or prevention of some medical conditions and life style diseases, such as obesity, diabetes type II and hypertension. The use of food biopeptides has been declared safe for consumers, but the safety of purified and synthesized biopeptides must be evaluated before commercialization because there still are several obstacles to overcome, particularly from the technological viewpoint to produce them at large scale without losing activity. Although several studies have shown non-toxicity properties of BP in the cell culture, direct studies should be done on the human body to find the molecular mechanisms of these interactions and use them as a tool to improve human health.

Keywords: Biopeptide, Functional food, Nutraceutical,Tayyab

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Health-promoting properties of vitamin C and omega-3 fatty acids in hemodialysis children

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Abstract

Introduction: Reported clinical findings indicate that omega-3 fatty acids (eicosatetraenoic acid (EPA) and docosahexaenoic acid (DHA)) have anti-inflammatory and cardioprotective properties. In addition, vitamin C is a powerful antioxidant that is thought to save you from low-density lipoprotein (LDL) oxidation. As, free radical damage begins early in chronic kidney disease (CKD) progression and it is an important risk factor for increased inflammatory status, CVD and its mortality, this study investigates the antioxidant impact of Vitamin C and Omega-3 in hemodialysis (HD).
Material and Methods: To accomplish this narrative review, we searched 4 Databases (PubMed, Web of Science, Scopus and google scholar) based on the search strategy from 2010 to 2022 with the high sensitivity on September 2022 by following MeSH keywords: " Vitamin C ", " Omega-3 ", " cardiovascular disease ", " chronic kidney disease ", " Hemodialysis ".
Findings: Most research indicates that omega-3 fatty acids could act as an antioxidant rather than a pro-oxidant in several cells, including vascular cells, diminishing inflammation, oxidative stress, and, in turn, the risk of atherosclerosis and degenerative disorders such as cardiovascular disease. Based on experiments and investigations scorbate acts through reducing other molecules, mostly transition-metal ions like ferric iron (Fe3+) and copper, either at the active site of enzymes or as free ions. Furthermore, In the presence of transition metals like iron, pro-oxidant effects might result in an extra oxi- dative damage, and ascorbylation might contribute to the carbonyl stress. Some research reported administration of 250 mg/day of intravenous (IV) vitamin C after HD sessions 3 times a week for 12 weeks and total DHA 600 mg and total EPA 1800 mg three times a week during dialysis treatment.
Conclusion: Current data indicate that vitamin C and omega-3 have the potential to prevent CVD in children with HD.

Keywords: Vitamin C, Omega-3, cardiovascular disease, chronic kidney disease, hemodialysis

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Effect of caffeine on kidney stones in children

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Abstract

Introduction
Nephropathy is a worldwide health problem, with a high recidivism rate after removal of the stone. Given the morbidity associated with kidney stones and the lack of knowledge, a thorough review of recent studies is critically important. The purpose of this study was to identify the effects of caffeine on increased urolithiasis in children.
Material and Methods
To accomplish this narrative review, we searched 4 Databases (PubMed, Web of Science, Scopus and google scholar) based on the search strategy from 2010 to 2022 with the high sensitivity on September 2022 by following MeSH keywords: " pediatric ", " kidney stone ", " nephrolithiasis ", " urolithiasis ", " coffee ", " caffeine ".
Findings
In addition to the diuretic effect of caffeine, it increases urine excretion of calcium, sodium and magnesium when consumed 300-360 mg (approximately four cups of coffee). This beverage along with other coffee components could have a protective effect against urological lithiasis formation. Consuming caffeine can slightly increase the risk of formation of calcium oxalate stones. Furthermore, tea has many protective effects against stone formation in children, due to the water supply that accompanies it, the action of caffeine, and components with antioxidant properties.
Conclusion
Caffeine has a hypercalciuric impact, partially balanced by a diuretic impact that appears after consumption of high amounts of caffeine. Based our dates, There is no evidence that moderate coffee consumption increases the risk of stone formation in healthy people, as long as the recommended daily consumption of liquids is maintained.

Keywords: pediatric, kidney stone, nephrolithiasis, urolithiasis, coffee, caffeine.

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Protein-energy wasting and ghrelin in children suffering from chronic kidney disease

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Abstract

Introduction
Ghrelin stimulates appetite, increases food consumption and encourages fat storage. In children with chronic illnesses, malnutrition is common, so it is essential to examine how to prevent malnutrition. The purpose of this study is to assess plasma concentrations of ghrelin in children with chronic kidney disease (CKD) and to assess their role in protein energy loss (PWE).
Material and Methods
To accomplish this narrative review, we searched 4 Databases (PubMed, Web of Science, Scopus and google scholar) based on the search strategy from 2010 to 2022 with the high sensitivity on September 2022 by following MeSH keywords: " Ghrelin ", " Protein-energy wasting ", " chronic kidney disease “, " Children ".
Findings
Ghrelin regulates fat distribution and energy metabolism in lean tissues, including the liver and muscles. In muscles, ghrelin increased mitochondrial oxidative enzyme activities independent of changes in fat metabolism genes and phosphorylated AMPK. Expression of peroxisome proliferator-activated receptor-γ (PPAR-γ), the activation of which reduces muscle fat content, was selectively increased in muscle where it paralleled changes in oxidative capacities. Thus, ghrelin induces tissue-specific changes in mitochondrial and lipid metabolism gene expression and favors triglyceride deposition in the liver over skeletal muscle. Patients with PEW and low ghrelin values had abnormally high C-reactive protein and leptin by multivariate analysis of variance and the highest mortality risk compared to non-PEW with high ghrelin from all-cause cardiovascular-related mortality.
Conclusion
Ghrelin appears to be a promising tool for modulating appetite and muscular metabolism with the potential to counteract the loss of lean body mass in CKD.
KeywordsGhrelin, Protein-energy wasting, Chronic kidney disease, Children

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The effect of plant-based diets on improving complications of chronic kidney disease

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Abstract

Introduction
Plant-based diets has been a heated discussion subject in the context of the treatment for chronic kidney disease (CKD) patients. It was reported to counteract some of the metabolic changes, lower risk of cardiovascular disease (CVD), and mortality in patients with CKD. The aim of this study is to determine the potential effects of these types of diets in CKD patients.

Material and Methods
To accomplish this narrative review, we searched 4 Databases (PubMed, Web of Science, Scopus and google scholar) based on the search strategy from 2010 to 2022 with the high sensitivity on September 2022 by following MeSH keywords: " chronic kidney disease “, " fiber ", " Plant-based diets ", " uremic toxins ".

Findings
There's a growing number of studies that plant-based diets such as Mediterranean and DASH diets can decrease inflammation in CKD patients. Some studies have confirmed that plant-based diets can significantly control uremia, slow down eGFR decline and delay dialysis initiation. It also has an enhanced outcome on glomerular pressure, which is assessed by plant-based therapy. In addition, consumption of fruits and vegetables has been shown to decrease metabolic acidosis in patients with CKD. Although some patients may be prevented from consuming plant-based due to the potential adverse event of hyperkalemia, potassium binders may be useful to prevent patients from hyperkalemia. A group of studies showed Plant-based diets cause to statistically significant reduction in CVD risk due to decreased intraglomerular pressure and lower levels of uremic toxins such as trimethylamine N-oxide (TMAO) and indoxyl sulphate and microbial dysbiosis correction in CKD patients. These affects can show a significant result of the fiber intake found in plant-based diets on CKD disease.

Conclusion
Recent studies have shown that greater adherence to a plant-based diet in addition to potassium binders is associated with positive kidney disease outcomes in patients with CKD.

Keywords: Chronic kidney disease, fiber, Plant-based diets**,** uremic toxins

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Effect of fenugreek supplementation on blood lipids and body weight: A systematic review and meta-analysis of randomized controlled trials

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Abstract

Introduction- Ethnopharmacological relevance: Fenugreek is a traditional herbal medicine that has been used for centuries to treat hyperglycemia, muscle spasms, gastritis, constipation, edema, and other metabolic disorders. Recently, lipid-lowering effects of fenugreek have been identified. The aim of this systematic review and meta-analysis was to determine and clarify the impact of fenugreek supplementation on anthropometric indices and serum lipid levels.
Material and Methods (Or Methodology)- We searched PubMed, Scopus, ISI Web of Science, Cochrane Library, and Google Scholar from inception to June 2019 using relevant keywords. All randomized controlled trials (RCTs) investigating the effects of fenugreek on anthropometric indices and plasma lipids in adults were included. A random-effects model was used for quantitative data synthesis. A sensitivity analysis was conducted using the leave-one-out method.
Findings- for quantitative data synthesis. A sensitivity analysis was conducted using the leave-one-out method.
Results: A meta-analysis of 12 RCTs (14 arms) with 560 participants suggested a significant decrease in plasma concentrations of total cholesterol (WMD = −9.371 mg/dL; 95% CI: −15.419, −3.323, p = 0.002), triglycerides (WMD = −13.776 mg/dL; 95% CI: −26.636, −0.916, p = 0.036), and low density lipoprotein cholesterol(WMD = −6.590 mg/Dl; 95% CI: −13.042, −0.137, p = 0.045), as well as an increase in plasma high density lipoprotein cholesterol (WMD = 3.501 mg/dL; 95% CI: 1.309, 5.692, p = 0.002), while body weight (WMD = 0.223 kg; 95% CI: −0.509, 0.955, p = 0.551) and body mass index (WMD = 0.091 kg/m2; 95% CI: −0.244, 0.426, p = 0.596) were not altered.
Conclusion- Fenugreek supplementation improved lipid parameters in adults. However, to confirm these results, more studies, particularly among hyperlipidemic patients, are needed.

Keywords: Fenugreek, Supplementation, Blood lipids, Meta-analysis, Systematic review

Investigating the effects of Tayyib foods on the fetus's health of pregnant mothers

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Abstract

Introduction: Healthy nutrition is the center of health, and from the Islamic worldview the point of view, it affects the body, soul, and faith of man. Health, quality, hygiene, and safety of food are effective on human health. Therefore, it is necessary to obtain a suitable nutritional program for humans, which leads to improved health and reduces the risk of diseases. Nutrition and especially Tayyib food, is one of the topics, that many Qur'anic verses are devoted to them. On this basis, Tayyib food means halal food, clean, appropriate to the mood, harmonized with the body structure, healthy, and with complete nutritional value, which has beneficial and productive effects on the human body and soul. Since possessing a healthy and appropriate diet during pregnancy is an important factor in enhancing the health of the mother and fetus and reducing the rate of fetal death, a healthy and normal pregnancy period needs to receive a sufficient amount of healthy food with complete nutritional value. Therefore in this study, we have examined and compared the appropriate nutritional program during pregnancy from the Quran and new researches perspective.
Material and Methods: In this study, we reviewed the papers, which were cited in SID and PubMed databases from 2011 to 2022 on the appropriate nutritional program during pregnancy and compared them with the Quran perspective.
Findings: Based on the results of researches, healthy food with full nutritional value deficiency leads to placental weight loss, low-birthweight babies, premature birth, and other problems such as mother high blood pressure during pregnancy. According to these studies, owning a healthy nutritional plan comprises fresh vegetables in every meal, drinking enough water, healthy snacks made with fruit, as well as fibrous foods in the food basket such as cereals, and avoiding unhealthy snacking, high-fat and sweet foods are necessary to ensure the mother and fetus health. There are many guidelines in the Tayyib and healthy foods field during pregnancy in the Qur'anic verses and hadiths. According to the Qur'anic verses, eating the main food groups, including halal and Tayyib plant and animal components, such as bread and cereals, fruits and vegetables, meat, milk, and dairy products, and halal sea foods in sufficient quantity and far from waste has been recommended.
Conclusion: Food quality is one of the ways to ensure food safety. Tayyib food includes food ingredients that are clean and free from any kind of contamination and provide human health. Overall, based on the Qur'anic verses and hadiths, as well as new researches, consuming halal and Tayyib food components during pregnancy may have the potential to guarantee the physical and mental health of the mother and the fetus. In this regard, education and awareness about healthy nutrition during pregnancy are necessary.

Keywords: Pregnant mother - Fetus - Tayyib food - Health - Qur'anic verses.

Prebiotics and their effect on healthy diet

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Abstract

Introduction- Nutrition is one of the main environmental factors affecting human health. Probiotics and prebiotics are an important development in the field of nutrition and the intestinal microbiota. This review article assessed the prebiotics and their effect on healthy eating.
Materials and methods (or methodology) - keywords of prebiotic, probiotic, fiber, microbiome were searched in PubMed, Google Scholar and Persian data bases. Articles were first evaluated based on the title and abstract and then based on the full text. The data were extracted and summarized based on the purpose of the research.
Result- Prebiotics mainly include indigestible or poorly digestible dietary fibers and carbohydrates that are resistant to the hydrolytic enzymes in the upper digestive tract and enter the large intestine unchanged. Many dietary fibers composed of carbohydrates have been emphasized as prebiotics, including resistant starch (starch and starch breakdown products), non-starch polysaccharides (cellulose, hemicellulose, pectin, gums, and mucilages). Fructo-oligosaccharides and galacto-oligosaccharides are two important groups of prebiotics that occur naturally in foods in limited amounts. Prebiotics are used as food by beneficial intestinal microorganisms (probiotics) and stimulate their growth or activity in the large intestine. Many studies have shown the beneficial effects of probiotic supplements in preventing diarrhea, necrotizing enterocolitis, acute upper respiratory tract infections, improving cystic fibrosis and eczema in children, and improving metabolic parameters in diabetic and cardiac patients.
Conclusion- The role of diet in the formation of intestinal microbiota, host metabolism and lipid homeostasis indicates the importance of high quality and balanced nutrition to improve human systemic health. The composition of the human diet can be targeted and subsequently selectively influenced the composition of the gut microbiota and consequently the health and control of specific diseases.
Key words: prebiotic, probiotic, healthy nutrition, fiber, microbiome

Diet-induced microbiota as a potential option for cancer treatment (Systematic review)

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Abstract

Introduction
Cancer is the leading cause of death worldwide. Treating cancer has been a highly complex process. Microbiota imbalance has been involved in many disorders including cancers. Tayyeb food is related to food safety and is vital for the protection of health. Diet may be used to target alterations of the microbiota to improve outcomes across cancer prevention, tumor development, and progression. The aim of this study is to investigate diet-induced microbiota as a potential option for cancer treatment.

Material and Methods
This review article was performed within articles published at PubMed, Science Direct, Google Scholar, SID, and Cochrane until October 2022. The keywords were cancer, diet, microbiota, and treatment. By searching this database; 62 articles were found, 19 of them by Reading titles and abstracts were removed. 43 articles were selected under the inclusion criteria. All articles were chosen from English and Persian articles.

Findings
Finally, 43 articles were included in the study. Tayyeb food as a public health priority, was essential for enhancement of health and quality of life. The western diet decreased beneficial bacteria, such as Bifidobacteria and Eubacteria, while potentially unhealthy bacteria, suchas Bacteroides and Clostridia, increased. Beta-glucan which stimulated the growth and activity of the desired natural intestinal microbiota played a vital role in the proper functioning of the gastrointestinal tract and preventing inflammation as well as diabetes, hypercholesterolemia, obesity, cardiovascular diseases, and cancer. Synbiotics combined with enteral nutrition could be a supportive care treatment for prophylactic antibiotics in patients with cancer. Administration of *Lactobacillus plantarum* 299v could be effective in the improvement of the quality of life of cancer patients receiving home enteral nutrition. Microbiota-enteral nutrition reduced insulin resistance, improved the immune status, and promoted postoperative recovery in patients with gastrointestinal cancer. Gut microbiota fermented dietary fiber to generate short-chain fatty acids (SCFAs), such as acetate, butyrate, and propionate, which could modulate the pathophysiology of the tumor environment through various critical signaling pathways. A probiotic combination containing *Bifidobacterium infantis, Lactobacillus acidophilus, Enterococcus faecalis,* and *Bacillus cereus* enhanced the immune response of patients and reduced the severity of inflammation through modification of gut microbiota. Cost-effective advances in the form of ready-to-use therapeutic foods (RUTF) offered solutions for children with cancer in low- and middle-income countries (LMICs) by redressing imbalanced microbiota and improving nutritional status.

Conclusion
Diet-induced microbiota alterations are key modulators of tumor etiology, progression, and response to cancer therapy. Observing a diet that nurtures healthy gut microbiota is essential to human health and increases life expectancy. However, need to be more research done on this topic.

Keywords: Microbiota, diet, cancer, treatment

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A3 -Fiqh and Sharieh

Black Ivory coffee (elephant dung coffee): halal or haram?

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Abstract

Introduction- Muslim people categorize foods into two main categories, halal and haram. Halal literally means permissible in Arabic, and haram translates to forbidden. The Qur'an clearly outlines which foods fall into these categories. Whether a certain food commodity is lawful or unlawful therefore often depends on the opinion of religious scholars, or on suspicions of undetermined or prohibited ingredients. In practice, this means that, in order to avoid contamination from haram sources, religious authorities also consider the context and handling of food when they determine whether a product is halal.
Black Ivory Coffee is a brand of coffee produced by the Black Ivory Coffee Company Ltd in northern Thailand from Arabica coffee beans consumed by elephants and collected from their waste. Coffee beans that are still in their original form are collected from the forest floor, cleaned then roasted and ground just like other coffee beans. Therefore, it is not harmful to coffee drinkers as these germs will disappear after going through the cleaning process, and grill with high heat before being packaged and sold. The taste of Black Ivory coffee is influenced by elephants' digestive enzymes and fermentation processes, which breaks down the coffee's protein. This article offers analysis of whether elephant dung coffee is halal or haram?
Methodology- In writing this review article, we searched in various databases such as google scholar based on the keywords including halal, haram, Black Ivory coffee, coffee, elephant dung coffee.
Findings- Imam al-Nawawi stated: If an animal eats a grain plant and then the grain is excreted from its stomach in a good condition. If the grain is still in its original form, whereas if it is planted, it can grow into a plant, then it is considered pure. However, its external part must be washed, for it has come into contact with najis. This is also because if the grain has become food for farm animals, which means from anything that has changed and spoilt (due to it being broken down and digested), then it became (najis), the same as if it swallows grains then excreted. The internal parts of the grain are pure, while its skin can be purified by washing it. However, if the condition (of the grain) doesn't stay the same changes), where if it is planted it cannot grow, then it is considered najis."
Likewise, Syeikh al-Ramli stated that if the grain remains (excreted) in a good condition where if it is planted it can grow into a plant, then it is considered mutanajjis and not najis. It is also a possibility that the opinion that states it is najis can be understood in the context that the grain is no longer in its original form.
Conclusion- According to the above discussion and arguments, in our opinion, elephant dung coffee is mutanajjis and it is permissible to be made into coffee drinks on the condition: (1) the coffee beans must be in a good condition, don't have holes, aren't broken and can grow if planted; (2) and the coffee beans must first be washed from the najis on them before being further processed into a beverage. Then, they are ground and used to make coffee, the drink is halal and permissible to be drunk.
Keywords: Coffee, Halal, Haram, Elephant

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Examining the reason for banning the consumption of Pork meat from the perspective of religion and science

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Abstract

Introduction: The sanctity of eating pork and the decree of its impurity by divine prophets is one of the scientific miracles of religions, as God the Almighty says in the Holy Qur an (Harmat Alaikum, wal-Mita, wal-Dam, wal-Ham Al-Nazir, etc.). Almighty God has a special focus on the prohibition and sanctity of using pork, and in several places of the Quran, he has mentioned the sanctity of using pork, and this repetition is the proof that pork is harmful to human health, hence the main purpose of the researcher in doing this article. A review is an examination of the reason for banning pork from the perspective of religion and science.
Methodology: In this review article, in order to find related articles, the keywords Pork meat , Lard meat and Pig were searched in Persian and English databases of PubMed, Scopus, Google Scholar, ISC and SID. In this study, articles published between 2010-2022 were examined. The Holy Quran, hadiths and articles on traditional medicine were also examined.
Findings: In several places of the Holy Qur an, pig meat is explicitly prohibited, as it says in verse 173 of Surah Al-Baqarah: Only (eating) carrion, blood, pork and what the name of other than God (during slaughtering) has forbidden you. Also, in verse 145 of Anam, the reason for the respect of eating pork is that it is unclean and disgusting, and the use of pork causes physical diseases such as cancer, influenza, and mental diseases in humans. But unfortunately, due to the ignorance of some people or the selfishness of some people, this undesirable food is one of the most popular meals in the world.
Conclusion: The results of the studies indicate that the necessity of following the orders of religion and taking advantage of modern science and using good food causes the health of human soul, mind and body.

Keywords: Pork meat, religion, science

B: Oral presentations

B1- Fundamental and practical research

Isolation and identification of beneficial microorganisms of traditional kefir beverage and its effects on Salmonella typhimurium and Listeria monocytogenes pathogens

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Abstract

Introduction- Kefir milk might have different ratios of microflora according to their origin(1). These microorganisms that constitute kefir grains are enclosed in a polysaccharide known as kefiran, which is a heteropolysaccharide and is mainly produced by *Lactobacillus kefiranofaciens(2)*. This study aimed to isolate and identify beneficial microorganisms and evaluate the antimicrobial activity of kefir beverage against two important food-born pathogens including *Salmonella* Typhimurium and *Listeria monocytogenes.*
Material and Methods- Microorganisms were identified by polymerase chain reaction method (PCR) with specific primers and antimicrobial activity was evaluated by disc diffusion method(3, 4).
Findings- microorganisms were identified as the natural inhabitants of the kefir grains, *Leuconostoc lactis, Lactococcus lactis subspecies lactis, Streptococcus cremoris, Enterococcus faecalis, Enterococcus faecium, Lactobacillus helveticus, Leuconostoc mesenteroides, Lactobacillus fermentum, Lactobacillus reuteri, Lactobacillus plantarum, Lactobacillus casei, Bifidobacterium langum, Saccharomyces cerevisiae,* and *Pischia fermentas.* Also, the results obtained from the disk diffusion method showed the inhibitory effect of kefir milk on *Salmonella* Typhimurium and *Listeria monocytogenes* with an inhibitory average diameter of 8.3±4.04 to 9.1±2.80 and 3.4±3.05 to 6.6±3.05 mm, respectively. The highest inhibitory effect was observed against *Salmonella* Typhimurium.
Conclusion- The results of this study showed that traditional kefir milk produced using kefir grains contained different species of lactic acid bacteria and yeasts. Kefir milk also exhibited bactericidal activity against *Salmonella* and *Listeria monocytogenes*.

Keywords: kefir beverage, lactic acid bacteria, yeast, antimicrobial activity, food-borne pathogen

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Investigating the effect of using fresh sourdough (SD) microbiota on the chemical, nutritional, technological, rheological, organoleptic, structural and shelf life properties of gluten-free bread: a systematic review

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Abstract

Introduction- Recently, there has been a growing number of patients suffering from coeliac disease, which is an autoimmune-mediated enteropathy in genetically susceptible individuals that is exacerbated by the ingestion of gluten proteins(1). The only treatment for coeliac is to follow a lifelong gluten-free (GF) diet(2). However, the lack of gluten in GF bread leads to poor quality(3). In this context, this review gives an overview of the influence of applying fresh sourdough (SD) microbiota on different properties of GF bread; including chemical, nutritional, functional, rheological, sensory, shelf-life, and structural properties.
Material and Methods- To recognize the relevant studies, scientific digital databases such as PubMed, Science Direct, Google scholar, and Scopus were searched up to march 2022.
Findings- A total number of 892920 articles were found by searching all databases, of which 19 articles met the inclusion criteria. All of the included articles had used fresh microbial SD as an intervention and they had disclosed the impacts of a/more certain strain/strains of SD microbiota (*LAB.* and *Y.*) on various quality characteristics of GF bread. Different types of GF flours had been applied including buckwheat, corn (or maize), millets (i.e., millet, pearl millet, and sorghum), oat, oil seeds (i.e., chia, flaxseed), quinoa, rice (white and brown rice), and teff flours.
Conclusion- SD microbiota with high EPS production, proteolytic activity, and acidification properties exhibited great potential for future applications in the manufacture of high-quality GF bread. However, there is a need for further studies to significantly reduce GF bread production time and eliminate the long fermentation of SD by using lyophilized or frizzed-dried SD.
Key words: Celiac**,** Gluten Free Bread, Quality, Nutritional Properties, Shelf-life

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The relationship between depression, anxiety and stress and Adherence to DASH)dietary approaches to stop hypertension(diet in COVID-19 recovered patients

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Abstract

Background: Coronavirus 2019 Disease (COVID-19) may cause severe systemic disease that affects in some organs, it is necessary to follow up patients after recovery and identify the adverse effects of the disease in other organs. Persistent Psychiatrics symptoms might patients After Acute COVID-19. We aimed to examining the relationship between depression, anxiety and stress and Adherence to DASH diet in recovered COVID-19.
Method: In this cross-sectional study, the study population consisted of 120 recovered COVID-19 patients aged >30 years were recruited. Using the valid and reliable food frequency questionnaire (FFQ)**,** an expert dietitian including 68 item was used to evaluate dietary intake Depression, anxiety and stress of participants was evaluated using DASS questionnaire. We analyzed our data using crude and adjusted models. Adjustments were made for age and gender, energy intake, living status (urban or rural) , smoker status and education stage, using three different models.
Result: The intake of dietary fiber, magnesium, potassium, also, the component of DASH-diet style including fruit, vegetables, nuts, legume, seed and low fat dairy in third tertile were higher than others. The intake of red and processed meat was higher between participants in 1st tertile of adherence to the DASH diet- style compared to the subjects in the T3 & T2. In multivariate multinomial logistic regression high adherence to DASH- dietary style was associated with lower depression (OR= 0.863; 95% CI: 0.741-1.006, p< 0.05), anxiety (OR= 0.867; 95% CI: 0.759-1.011, p<0.05) and these associations remained significant after adjustments. Regarding stress high adherence to DASH- dietary style was associated with lower stress after adjustment in models.
Conclusion: adherence to DASH- style diet may be associated with reduced depression, anxiety and stress in recovered COVID-19 patients.

Key words: DASH diet, COVID-19, Depression, anxiety, stress

B2- Fiqh and Sharieh

Cell-based meat (lab-grown meat): halal or haram?

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Abstract

Introduction- Food products suitable for Muslim consumers should be halal certified, particularly when their origins or production processes are doubtful. For example, meat products must abide by a number of requirements in relation to their preparation, condition and content to be considered halal.
Cell-based meat is produced using animal cell culture technology, where meat is produced from animal cells using a combination of biotechnology, tissue engineering and synthetic processes. This technology does not reproduce the animal itself, but produces a product that is intended to resemble traditional meat from an animal, such as steak, minced meat, etc. Therefore, this research aimed at discussing the Islamic perspective on cell-based meat.
Methodology- In writing this review article, we searched in various databases such as scholar, article journal and websites based on the keywords including halal, haram, cell-based meat, lab grown meat.
Findings- Cell based meats are obtained by taking a portion of meat from the animal's body such as beef, chicken or fish, either when the animal was still alive or after it was dead. Under this process, we deemed it to be in accordance with the hadith of Prophet Muhammad PBUH about the ruling on limbs severed from the body when the animal was still alive. In a hadith narrated by Abu Waqid al-Laythi, Prophet Muhammad PBUH arrived in Medina and the people of Medina cut the camel's hump and goat's limbs. Then the Prophet said: Whatever is cut from a living animal is dead (and consequently, considered as unclean). Based on this hadith, there are two important points discussed by Islamic scholars.
Firstly, eminent scholars agreed that if the body parts were cut off after the animal was slaughtered and dead, then the body parts were not considered a carcass and thus it is lawful to they be eaten. However, if the body parts were cut after it was slaughtered given that the animal was not completely dead, then the act is considered detestable, but the body parts were still considered clean and thus lawful to be eaten. Thus, in the issue of cultured meat, if the source of stem cells was taken after the animal is slaughtered, then the cultured meat produced is clean and lawful to be eaten because the source is lawful or halal. This ruling applies to all types of animals, be it four-legged, twolegged or animals with no leg. Secondly, fish and locusts are not included in this ban derived from the previous hadith because there are other hadiths stated that both are permissible. Therefore, if the carcass is lawful to be consumed, then any body parts being cut off are also lawful or halal. Therefore, any cultured meat originating from marine life is considered permissible even if the stem cells are taken when the marine life is still alive. Thirdly, Islam has set certain conditions in slaughtering, which covers the conditions of the animals, the slaughterer and tool used for slaughter.
Conclusion- The halal status of cultured meat can be resolve through identifying the source cell and culture medium used in culturing the meat. The halal cultured meat can be obtained if the stem cell is extracted from a (Halal) slaughtered animal, and no blood or serum is used in the process.

Keywords: Cultured meat, Halal, Lab grown meat, Islamic view

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Full papers presented

A- Poster presentations

B- Oral presentations

Full papers presented

A- Poster Presentations

A1- Economy and management

The need to use organic fertilizers in the production of healthy food products

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Abstract

One of the important goals in the era of modern science flourishing is to increase food security following population growth and per capita consumption. Rapid population growth has increased the need for agricultural products and paved the way for the development of agricultural products. The use of chemical fertilizers and pesticides has always been one of the most important priorities in improving the activities of agricultural producers. Studies have shown that excessive and indiscriminate use of these fertilizers causes all kinds of pollution in natural resources and causes deadly diseases in humans. In this regard, organic agriculture based on the use of organic fertilizers as one of the components of development Sustainable agriculture and valuable solutions to protect the environment have received special attention. The results indicate that organic agriculture by minimizing and phasing out these toxins and chemical fertilizers while reducing their potential risks, increases the value and quality of food products and generally promotes food safety as the most important development goal. Cultivation of organic crops is charged. Therefore, the purpose of this article is the need to use organic fertilizers in the production of healthy food products, to determine the environmental and biological effects of chemical fertilizers, the benefits of organic fertilizers and the need to use them and the situation of organic agriculture in Iran.

Keywords: Keywords: Food Security, Organic Fertilizers, Food Safety, Organic Agriculture

Sustainable agriculture and production of healthy food products

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Abstract

Human health is his most important asset, which is exposed to various environmental risks today. Conventional agriculture, with the indiscriminate use of production inputs in order to increase yield, causes all kinds of contamination of water and soil resources with chemical waste, especially nitrates and pesticides, high energy consumption, salinity of soil and water resources, soil erosion, production of greenhouse gases, and the occurrence of various cancers. and fatal diseases in humans. Due to the fact that the spread of many diseases and cancers in the country is related to the chemical substances in food products, therefore, rethinking the way products are produced by using sustainable management methods can be a solution. Undoubtedly, having enough food is a human right and it is unacceptable to be deprived of it for any reason. Sustainable agriculture is actually one of the solutions that can play the most important role in improving the food security of future generations, and its development is necessary to achieve a healthy environment and preserve natural resources and produce healthy and sufficient food for all people. This article tries to review the importance of sustainable agriculture for the production of healthy food while examining the concepts of sustainable agriculture and its relationship with food security and provides the necessary solutions in this field.

Keywords: Sustainable agriculture, healthy and organic product, healthy food, food security, pollutants

Global market of halal and Tayyeb food products

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Abstract

Introduction: Today, halal has become a global brand, so that it has entered the realm of business and marketing from a purely religious issue and is becoming a global symbol for choosing a lifestyle and guaranteeing quality. On the other hand, Halal has a developed stage and it is Tayyeb. So that being Halal for a product show that not only is the product in question halal, but it also has a series of other advantages that make it superior and more valuable than other products. Therefore, examining the market of halal products and trying to develop it quantitatively and qualitatively is essential, and it also provides the infrastructure to create a market for Tayyeb products.

Materials and methods: The current research is a study of the current situation analysis, in which the amount of production, supply and demand of food products was determined.

Findings and conclusions: The present study shows that the issuance of halal product certification is a prerequisite for entering the global halal market. The Muslim population is about 1.5 billion people, which is considered a market with a very high potential for consumption of halal and Tayyeb food products. The main root of halal food is in Asia, and its largest regional market is Asia and the Pacific. At the same time, a large population of other religions in different African countries, China, Europe, America and Australia have a great desire to consume halal food. Countries such as Malaysia, Singapore, Thailand and Australia have a special system and codified rules for providing halal food production certificates to producers, and this has facilitated the export of halal food products to other countries. On the other hand, the economic power of halal products has been able to create new markets by creating job opportunities for Muslims. This situation has a good prospect for business success in the development of halal indicators, which is drawn in the form of Tayyeb.

Keywords: Halal, Tayyab, food products, market

Tayyeb meat market based on the demand for Halal meat in the world

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Abstract:

Introduction: A halal certificate is a document issued by an Islamic organization that certifies that the products listed in the certificate are based on Islamic guidelines as defined by that organization. Many companies are looking at the concept of Halal as a new tool for marketing. Meat and its substitutes are expected to form the largest segment of halal products by 2025. As the world's Muslim population grows, the demand for halal meat and meat products will also increase. Growing population, economic development and consolidated consumer income are major factors expected to contribute to the development of the product market.
Materials and methods: The current research is a study of the current situation analysis, in which the amount of production, supply and demand of food products was determined.
Findings and conclusions: In addition to religious values, the Islamic community believes in teachings such as protecting the future generation, preserving life, preserving integrity, and self-respect, which is the reason of consumption of Tayyeb products and consumption of halal and Tayyeb meat. In addition, respect for animal welfare, health awareness and level of education are also some of the effective factors in the growth of the halal and Tayyeb meat market. Supporting religious obligations and social beliefs not only in meat products, but also gradually expands the capacity to cover the services of meat production logistics. Food products produced in Islamic countries, especially in Iran, follow Islamic laws and are halal. Therefore, due to the proper infrastructure in the country, Iran can be a factor in promoting the Tayeb brand and the leader in the production of Tayeb products, in the region and around the world.

Keywords: Tayyab, halal, meat, world market, demand

Tayyeb brand gap analysis in the introduction stage of life cycle in the domestic market

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Abstract

Tayyeb brand has been introduced with the aim of supporting Muslim consumers by implementing a food chain based on Islamic principles in all stages of the chain. Brands are closely related to emotions and beliefs, especially when it comes to religion. Any deviation of the desired brand values from the customers' feelings and perceptions leads to a gap between the two that is related to the brand gap. Understanding the brand gap and its reasons helps brand owners in setting strategies and increasing the quantity and quality of brand life. In this article, the evaluation of different aspects of the brand has been done by completing a five-point Likert questionnaire by 130 people in the spring of 1401S.H. Analysis of collected data with descriptive tools and non-parametric Friedman test, showed that the maximum brand gap was observed in the customer aspect of brand. Therefore, it was suggested that customer-oriented approaches be considered in the design and diversification of products, the order of supply to the market, and the characteristics of adaptation to the Muslim lifestyle.

Keywords: Tayyeb brand , Brand gap , Non-parametric Friedman test

Evaluation of effective factors on the development of digital marketing of Tayyeb food products (case study: saffron of Yazd province)

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Abstract

One of the most important topics in the marketing world is digital marketing, which has attracted many fans today. Along with the increasing growth of technology in today's society, the use of up-to-date technologies in the field of services and business is expanding and progressing. In the agricultural industry, the use of these new technologies can improve services and product sales. One of the valuable agricultural products is saffron, which, in addition to its edible use, also has medicinal uses. The aim of the current research is to investigate the effect of effective factors on the development of digital marketing of agricultural products (case study: saffron of Yazd province). For this purpose, the important and effective factors in the digital marketing of this product were first identified through the review and previous studies, and a questionnaire was compiled based on that. After checking the validity of the questionnaire, the questionnaire was given to the experts in this field. 10 experts answered the questions of the questionnaire based on pairwise comparisons, and after collecting the data from the questionnaire, these factors were prioritized using the fuzzy hierarchy method. The results of this research showed that in the field of digital marketing of saffron product, the main influencing factors in order of priority are: customer related factors, international related factors, website related factors, digital marketing efficiency, digital marketing method. In order to examine these factors more closely, several sub-criteria were also considered for each factor and these sub-criteria were compared with each other using pairwise comparisons and the fuzzy hierarchy method, and the priority of each of them was determined. It was found that, in general, in all the sub-criteria, the after-sales service sub-criterion with a coefficient of 0.532 is the most important sub-criteria among all the sub-criteria and the customer information sub-factor of the product with a coefficient of 0.004 is the least important among all the sub-criteria.

Keywords: Digital marketing, saffron, Tayyeb food, halal food, agricultural products, Yazd province.

An Investigating On Pheasant And Its Useful Impacts On Human's Body And Health

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Abstract

Nowadays due to over working and daily life style, disease rates and the majority of harmful habits has been increased. Other words modern life style (either healthy and non-healthy life style) has been effected by individual, social and economical attitutes generally. Nutrition is the most important aspect of life style. Unfortunately awareness about foods especially ingredients is so poor in publicity. People usually don't pay attention to 6 top principles which are well known as "ASBAB SETTEH" in Islamic Traditional Medicine. Not only there's no attention on these top 6 but also most of the time the main root of disease are followed beyond these top 6. As we mentioned above nutrition especially foods and drinks matter so much so that we are about to explain pheasant role and its useful impacts on human body and health. Although the awareness about pheasants main role is not rich as well. The methode of research is based on survey, available hard copies, books, orall history, medical sources and etc. Based on our research not only the pheasants are distinguished among other birds but also the all parts of their bodies is useful in healthy life style. Unlucky pheasants are known as decorative and entertainment birds totally in public however pheasants have a large scale of useful positive potentials that has been ignored in public but we believe so by regenerating and breeding not only we could achieve best results in agrictural, environmental and nutrition science but also in human's health and green healthy life style.

Key words: Pheasant, Impact, Health, Life Style

Analyzing the role of consumers' attitudes in the special value of Tayyeb brand

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Abstract

The name Tayyeb, which is derived from the Holy Quran, is more specific than the halal brand due to its high quality. Tayyeb in Islamic view and also based on compliance with organic, halal and beneficial standards in the production chain to consumption is defined based on five principles, which are solubility, health, originality, attractiveness (beauty), and blessing. One of the methods of measuring the value of a brand is to measure the specific value of the brand, which in this study is based on 24 dimensions of awareness, perceived quality, brand association, and brand loyalty. Due to the infancy and low knowledge of people about Tayyeb brand and lack of study in this field, the purpose of this study is to investigate the role of attitudes toward Tayyeb brand certification in creating brand equity. The present study is based on the applied purpose and is based on a descriptive correlational method. A simple questionnaire was used to collect data from a questionnaire and due to the unlimited statistical population. Using the Cochran's formula of infinite society, 119 food consumers in Khorasan Razavi province in 2022 were selected as the sample size and the research hypotheses were tested using structural equation method. The results showed that the attitude towards Tayyeb certificate had a positive and significant effect on brand awareness and perceived quality and the effect of attitude towards Tayyeb certificate on brand association, perceived quality and loyalty of Tayyeb food brand was confirmed; Also in this study, the internal effect of brand equity dimensions was evaluated. The results confirmed the effect of brand awareness on brand association and perceived quality, and the effect of perceived quality on loyalty was also confirmed. But the effect of brand awareness as well as brand association on the loyalty of Tayeyb food brand was not confirmed.

Keywords: Brand equity, Tayyeb, Attitude

An overview of the composition and properties of royal jelly dragees

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Abstract

Royal jelly is an important functional food item that possesses several health-promoting properties. Royal jelly is a viscous jelly substance and milky secretion contains 62 to 68.5% water, 11 to 18% protein, 7 to 18% sugar, 2 to 8% fat, and at least 1.4% 10-hydroxy2 - Decenoic fatty acid and less than one percent of vitamins and minerals. The health-promoting properties of Royal Jelly include; Immunomodulatory and Anti-inflammatory Activities, Increases fertility and sexual vitality, Reducing the side effects of chemotherapy and radiation therapy and improving the quality of life of certain patients, Improving memory, and Reducing the risk of dementia and Alzheimer's disease, Anti-diabetic, Regulates blood pressure and prevents cardiovascular disease, Reduces the damaging effects of Rheumatoid Arthritis and Antibacterial and Antiviral Activities.

It's recommended that sublingual absorption can be more efficient overall for Royal Jelly than intestinal uptake. The storage condition (4 or -18°C) and Royal jelly dosage are critical. On the other hand, taking Royal Jelly, especially in the overdose, may lead to an allergic reaction. Since the specific gravity, moisture, and storage condition of Royal Jelly are different from honey, in a mixture of honey and royal jelly, Royal Jelly is exposed to oxygen, then spoilage occurs. For this reason, this method of use, a mixture of honey and royal jelly, is not recommended. Also, the use of Royal Jelly in the form of capsules, due to swallowing and lack of oral absorption, is not recommended.

The research and development unit of the Kooze Asal knowledge-based Company, with new knowledge in Pure Persian Royal Jelly processing, has been able to develop a domestic production technology of Dragée Royal Jelly (DRJ) by international standards. Freeze-dried royal jelly goes through a process of dehydration, also known as lyophilizing, to remove the water by high vacuum at low temperature. This process does not include heat or chemicals. Lyophilized royal jelly in DRJ maintains all the nutrients of the fresh product and allows for storage at room temperature and longer shelf life. Pure Persian royal jelly is harvested from Kooze-Asal beehives, depending on the quality charter of the Association of Producers of Royal Jelly. Sucking/Chewy Dragée, named DRJ is composed of freeze-dried royal jelly and honey with natural coating and contains no additives, dyes, or added sugars. In this article, we review the research of recent years on the unique properties of this supplement for a healthy lifestyle called dragee royal jelly (DRJ).

Key words: Royal Jelly, Sucking/Chewy Dragée, healthy lifestyle

Importance of Successful Branding in the Poultry Industry in Iran

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Abstract

Despite the development of the poultry industry in Iran, because of complications like inflation and embargos, no proper branding system has been founded. The lack of appropriate branding will cause the investment in this field to not increase in proportion to the demand in the face of the demand expansion, and ideal profit will not be obtained. Proper branding has certain principles, and if it is coordinated with the quality of the products, it will gain credibility, increase profitability, and improve employee efficiency. Branding determines what customers should expect from the quality of a product. For each brand, long-term goals are set, and all components and actions are coordinated towards this goal and in sync with customers' needs. Non-observance of coherence and integrity in the media, incompatibility of advertisements with goods, and pondering limited to one area are some common mistakes in branding. The most significant benefits of branding include increasing people's awareness of the business, attracting customers, growing the business value, creating investment opportunities, strengthening customer trust, and improving the performance of the employees. Therefore, paying attention to the proper branding in the poultry breeding industry is crucial.

Keywords: Branding, Industry, Poultry, Success

The Transition of the Poultry Industry from Small Ownership to the Integrated System in Iran

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Abstract

Among the factors that have caused the decline of Iran's poultry industry in recent decades, we can mention the mandatory pricing, dependence on the currency price, and the lack of integration of production units. To minimize inconsistencies in the production process and control market fluctuations, macro management is required. Unfortunately, due to traditional thinking, each part of the supply chain of poultry products only thinks of their interests and often doesn't work as a coordinated chain. This lack of coordination causes an increase in production cost, an increase in the final price of the product, and a decrease in competitiveness. In a coordinated and well-managed production chain, the production of each part is proportional to the amount of demand, the age of slaughter and hatching is adjusted according to the market, and the fluctuations caused by the feed price are taken into account. Traditional structures do not have the necessary efficiency and create instability in such a way that different people enter and exit the poultry industry. Ultimately, the damage is caused to the government and the people. Therefore, unified and coordinated management in the production chain of products leads to progress and achieving the potential capacities of the country.

Keywords: Industry, economy, poultry, coordination, regulation

Investigating the income flow of the International Organization for Standardization

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Abstract

The ISO organization is one of the most influential standard organizations in the world, knowing how it works can help any standard organization in various aspects. In this article, by focusing on the analysis of income generation methods and examining the income of this organization, it has been tried to provide solutions for sustainable income generation of Nishan Tayyab. Also, Iran s National Standards Organization has been analyzed as Iran s representative in this organization.

Keywords : International Organization for Standardization, National Standards Organization of Iran, ISO, ISO annual report

Investigating the income generating capacities of the Halal badge

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Abstract

The closeness of the concepts of halal and tayyab creates a positive correlation between the market of products produced with halal and tayyab standards. Therefore, the examination of the market of halal products (analysis of the halal industry) and the income generation methods of the Halal Institute of Malaysia (Jakim) as the most important beneficiary organization of the halal mark in this article will significantly help to know the target market of the mark and estimate the income generation of this mark.

Keywords : Halal Malaysia, Halal income stream, Halal industry analysis, Jakim

A2- Laws and standards

Study of the main motivations for the formation and halal brand globalization as a model for Tayyeb emblem

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Abstract

In Islamic sources, there are many propositions in the field of food, nutrition and food technology, which are based on the design of processes and food systems and the design of food standards, nutrition and food technology, which can form a superior brand as nationally and internationally. This superior brand can bring great benefits to the products and industries in this field. The halal brand, which has now become a global brand, is also the result of converting the criteria at least religion of food into food products and food standards. In the formation of a brand, there are various motivations involved. These motivations can be social, cultural, political, and most importantly economic. Since the halal food brand has been designed and based on accepted principles of Muslims, the contribution of religious incentives is higher than other dimensions in shaping of it. The present article also investigated the main factors including religious, economic, and regional and main motives in the formation and globalization of Halal brand. By paying attention to the role of each of these factors and motives, the path of development of this brand in the country as well as promoting the economic and commercial status of Iran In the world of economy, will be smoother and faster.

Key words: Globalization, Halal, Tayyeb, Shaping, Motives

Application of proteomics and genomics inTayyib Food: Tracing of Genetically Modified Food

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Abstract

Food safety has found new dimensions due to the introduction of biotechnology in production. This issue is particularly important considering the ten percent share of simulated food in the consumer market. In addition, the global demand for using safe food is growing. Tayyib food, by having a concept close to Halal food, even beyond, has several indicators, including being healthy with the concept of not having any harmful processes, toxins, and additives, referring to the separation of non-organic foods from this category. Protein and nucleic acid-based detection techniques are necessary to identify and quantify these compounds to implement labeling regulations. Therefore, proteomics and genomics can be considered as new technologies and suitable solutions to respond to such concerns and mental sensitivities of society. Then, in this study, the potential of proteomics and genomics in identifying different cloning products, existing tools, and their challenges in obtaining a Tayyib index has been investigated.

Keywords: Genetically modified food, Food safety, Tayyib, Health

The Role of Rule of Law in Ensuring Tayyeb Food Security in the Light of Soil Protection Law 1398

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Abstract

Tayyeb Food is pure and developmental food, without external and internal pollution, which is in harmony with the structure of the human body. Soil quality is one of the things that directly affects the quantity and quality of food. According to the Food and Agriculture Organization (FAO), 33% of land is now degraded due to erosion, salinization, compaction, acidification and chemical contamination of the soil, this is a threat to food security and one of the important reasons for the need to protect the soil and achieve Good Governance of Natural Resources. Good Governance is one of the goals of the Millennium Development Goals, which is expected to be participatory, transparent, accountable, effective and equitable, and to promote the rule of law. It seems that with the realization of the legal index of the rule of law, the binding nature of laws and legal requirements can be used to implement the ideas of technical experts in sustainable soil protection. This article tries to examine the impact of using the Rule of Environmental Law and the existence of appropriate and effective laws and regulations in this field, to achieve Good Governance and thus sustainable soil protection and Tayyeb Food security.

Keywords: Sustainable Soil Protection, Soil pollution, Soil degradation, Good Governance, Environmental Rule of law, food security, Tayyeb Food

A review of cytotoxic effects of food additive azo dyes on brain-subregion

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Abstract

Azo dyes, as a major group of the synthetic colorants are added to food products not only to make them aesthetic but also to preserve their appearance. However, the use of azo dyes in food has been banned due to its side effects on human health in throughtout world . The search was conducted using PubMed, Scopus, Web of Science, Europe PMC beta, Science Direct, and Springer database considering all articles published up to 9 July 2021. The inclusion criteria were double-blind, randomized, cohort studies, placebo-controlled trials, case reports, non-controlled trials, and case series. The several studies suggest the azo dyes induce oxidative stress, which subsequently increase the concentration of malondialdehyde and reduce superoxide dismutase activity and glutathione (GSH) concentration in brain tissue. Also, results showed the adverse effects of azo dyes on the brain parts such as prefrontal cortex, cerebellum, and cerebrum which is accompanied by changes in the brain function. It can be concluded that azo dyes with an increase in oxidative stress affect the most important parts of the brain and cause brain dysfunction. The aim of this study was to evaluate the effects of the food additive azo dyes on the brain tissues.

Keywords: Azo dyes, Tartrazine, Sunset yellow, Sodium benzoate, Brain-Subregions, Neurological Effects

Introduction

Recently, a wide variety of food additives have been used to the improve of the quality, constancy, taste, and prices of food (Ashfaq and Masud 2002). Artificial food additives include azo, xanthene, triphenylmethane, quinoline, and indigotine dyes (Zhang, Zhang et al. 2010). Azo dyes, the largest group of synthetic dyes, are identified by one or more azo groups (N=N) in their structure and aromatic rings linked to them. Some of these aromatic rings are cleaved into aromatic amines, which are toxic and carcinogenic (Demirkol, Zhang et al. 2012, Sun, Jin et al. 2017).

Azo dyes are employed for coloring food products such as candies, jam, citrus marmalade, custard powders, orange sodas, energy drinks, ice cream, packet soups, and chips (Zhang, Zhang et al. 2010, Kus and Eroglu 2015). Despite the low cost, stability, availability and uniformity of azo food color, the high amounts consumption of them can cause various side effects, especially in children because of their low body weights (Dixit, Purshottam et al. 2010). The adverse effect of azo dyes has been investigated for decades. It has been reported that azo dye agents, especially food color additives, can cause hypersensitivity, hyperactivity, and learning disability in children (Mikkelsen, Larsen et al. 1978). Elbanna et al. reported that the artificial food colorants might cause significant adverse effects on the liver, spleen, kidney, small intestine and stomach, suggesting that oxidative stress can be induced by the toxic metabolism of azo dyes (Elbanna, Hassan et al. 2010). A number of azo dyes, such as tartrazine, Sunset yellow, Sodium benzoate, Sudan III, ponceau 4R, Metanil yellow erythrosine B, Chocolate brown HT, Allura red, negatively induced neurobehavioral defects and brain function disorders (Tanaka 1993, Tanaka 1994, Tanaka 1996, Tanaka 2001, Tanaka 2006). The aim of this review was to evaluate the effect of the azo dyes used for food coloring on brain tissues.

2- Food Additive Azo Dyes

food additive azo dyes have been used in the food and pharmaceutical industries for many years because they increase the quality of the food and preserve their appearance and nourishing food sourcse. in particular, the high amounts consumption of azo dye can cause various side effects such as attention deficit hyperactivity disorder (ADHD), learning disability and memory disorder. This paper reviews the knowledge and research advances realated to tocixity of a number of azo dyes . A summary of a list of Azo dyes with their properties which are applied in the food industry, can be seen in Table 1 (Table1).

Tartrazine *(E 102, FD, and C Yellow)*. The formula of tartrazine dye (Yellow 5) is C16H9N4Na3O9S2, which is usually a solid orange-colored powder at room temperature (Linskens 2020). Tartrazine is a component, lemon yellow, water solvent color dye, which is obtained from coal tar (Rafati, Nourzei et al. 2017). After tartrazine dye consumption, the body loses zinc, an element that is vital for the proper function of cognition (Gao, Li et al. 2011). It has been shown that Yellow 5 might be involved in the deficits of cognition, memory, and learning in mice and rats (Gao, Li et al. 2011, Rafati, Nourzei et al. 2017, Linskens 2020). Also, it has been suggested that tartrazine exposure at the fetal level significantly affects the cognitive flexibility and organism's memory (Linskens 2020). Exposure to Yellow 5 leads to an increase in the level of malonaldehyde, which is an oxidative stress marker, and decreases the antioxidant enzymes in the rat brain (Rafati, Nourzei et al. 2017, Gičević, Hindija et al. 2019). The administration of tartrazine dye was associated with a decrease in the level of 5-hydroxytryptamine in the cerebellum. This phenomenon might be correlated with the synthesis of free radicals after metabolization of azo food color by gastrointestinal bacteria. The radical oxygen inhibits the generation of adenosine triphosphate (ATP), which leads to the decreased synthesis or reabsorption of the transmitter in the presynaptic neuron (Bawazir 2016). Previous experimental studies have shown that exposure to tartrazine has effects on brain performance and accompanies by constructive changes in the prefrontal cortex and cerebellum (Rafati, Nourzei et al. 2017, Bhatt, Vyas et al. 2018). According to a previous study, in animals treated with tartrazine compared with the controls, no crucial change in the brain weight was observed (Bhatt, Vyas et al. 2018). Another study revealed that perinatal exposure to tartrazine within the acceptable daily intake (ADI) range was accompanied by neurobehavioral alterations in an animal model (Albasher, Maashi et al. 2020). Moreover, neuronal degeneration of the cerebrum, chromatolysis, and pyknosis 21 and 35 days after exposure of mice offspring to different doses of the tartrazine was seen (Albasher, Maashi et al. 2020) (Figure 3). Also, apoptotic and anti-apoptotic properties of tartrazine at low and high concentrations were confirmed in the liver of mice, respectively (Raposa, Pónusz et al. 2016). Moreover, tartrazine elevates the level of gamma aminobutyric acid (GABA) through inhibition of the calcium channels. According to the previous description, it is suggested that antioxidants should be used for the side effects of tartrazine. Vitamin E is suggested to be used as a therapeutic and neuroprotective agent in neurodegenerative diseases (Gao, Li et al. 2011).

Sunset yellow *(E 110, molecular weight 452.36)*. Sunset yellow, which is an orange-yellow azo dye, is approved as a food colorant in India (Haneen and Hassan 2020). This food colorant is used in different types of foodstuff such as jams and jellies, candies, sweets, canned juice, pickles, sauces, ice cream, and many other food products(Ching, Akpan et al. 2005, Feng, Cerniglia et al. 2012). Studies have shown that sunset yellow significantly increases the chromosomal aberration (Gap, breaks, ring, and delayed) (Al-Kaisei, Humadi et al.). The primary lesion in the brain due to the sunset yellow is characterized by the aggregation of mononuclear cells along with congestion and dilation of the meningeal blood vessels (Haneen and Hassan 2020) (Figure 4). A previous study revealed that consumption of sunset yellow induced the generation of free radicals, which subsequently increased the concentration of malondialdehyde in the kidney, brain, and liver tissues (Haneen and Hassan 2020). This study showed a significant reduction in the superoxide dismutase activity in rats treated with sunset yellow (Sarhan, Shati et al. 2014). Sunset yellow administration decreases the glutathione (GSH) concentration; this finding was in the same line with the results reported by previous studies (Kweon, Park et al. 2003, Sivaramakrishnan, Shilpa et al. 2008). Sunset yellow can also induce meningioma due to the lack of this organic diet in biodegradation (Haneen and Hassan 2020).

Sodium benzoate *(E 211, molecular weight 144.10)*. Sodium benzoate (SB) is a popular water-soluble food additive that has fungi static and bacteriostatic properties. This agent is broadly utilized in different food preparations, including jellies, pickles, jams, carbonated drinks, etc. FDA has allowed the use of SB in food products at a limit of 0.1% (1000 ppm) (Noorafshan, Erfanizadeh et al. 2014). It has been suggested that SB might be correlated with childhood hyperactivity (Egger, Graham et al. 1985), angioedema (Nettis, Colanardi et al. 2004), asthma (Freedman 1977), urticaria (Rajan, Simon et al. 2014), and other behavioral disorders (Beezhold, Johnston et al. 2014, Noorafshan, Erfanizadeh et al. 2014). Non-toxic amounts of SB can inhibit cell defense responses (Maier, Kurz et al. 2010). It has been shown that SB can damage memory and initiate oxidative status in mice with increased malondialdehyde and decreased glutathione concentrations in the brain, which was statistically significant (Khoshnoud, Siavashpour et al. 2018). SB can also induce nephrotoxicity and neurotoxicity in zebrafish larvae; however, there is not enough information in the field of oxidative stress and behavior due to SB exposure (Tsay, Wang et al. 2007, Chen, Huang et al. 2009). Some previous investigations have reported that SB might be neuroprotective due to its effect on overexpression of protein deglycase DJ-1 and neurotrophic factors (Khasnavis and Pahan 2012, Jana, Modi et al. 2013, Lin, Chen et al. 2014). It is hypothesized that SB can modify the symptoms of neurological disease by other mechanisms (Arabsolghar, Saberzadeh et al. 2017). It is important to note that higher consumption of Sodium benzoate might be correlated with attention-deficit hyperactivity disorder (ADHD)-related symptoms in pediatrics (Lok, Chan et al. 2013, Noorafshan, Erfanizadeh et al. 2014).

Conversely, in another study, SB could protect the ability of learning and memory due to reducing oxidative stress in the hippocampus by increasing the GSH level and decreasing the homocysteine level (Modi, Roy et al. 2015).

Sudan III *(Solvent red 23, CI 26100).* Sudan dyes, an azo and diazo colors, are chemical materials that are widely utilized as colorants in foods, solvents, textiles, waxes, cosmetics, etc. The Sudan III is a member of Sudan dye family, which has confirmation for use in cosmetic products that do not contact the mucus membranes due to its lipophilicity (EC, 2005; MERCOSUR, 2008, 2011). Sudan III can induce enzymes that metabolize drugs so that can suppress the toxic effects evoked by 7,12-dimethyl-benz (a) anthracene (DMBA) in vivo. Hatakeyama et al. (1995) demonstrated a statistically significant assuagement of DMBA-induced reticulocytes in mice that were administered Sudan III (Hatakeyama, Hayasaki et al. 1995). Hatakeyama et al. also revealed that Sudan III initiated activities of 7-ethoxycoumarin O-deethylase, CYP1A1, glutathione S-transferase, and uridine 5′-diphosphoglucuronic (UDP)-glucuronyl transferase (Hatakeyama, Hayasaki et al. 1995). Moreover, it could increase DMBA mutagenicity when hepatic microsomes from rats treated with Sudan III were used in the Ames. It has been shown that Sudan III can stimulate a ligand-activated transcription factor, which is named aryl hydrocarbon receptor (AhR). This receptor can mediate the biological and toxic effects of different compounds. (Segura-Aguilar, Cremades et al. 1994). Moreover, the decrease of this component can lead to the renal carcinogenicity of estrogens (Segura-Aguilar, Cortés-Vizcaino et al. 1990).

Ponceau 4R *(E 124, molecular weight 604.46*). Ponceau 4R (1-(4-sulpho-1-napthylazo)-2-naphthol-6,8-disulfonic acid, trisodium salt), which is a water-solvent powder and the strawberry red azo color, is usually utilized in drinks, syrups, sweets, jelly beans, sugar candy, ice cream, and other foods (Chanlon, Joly-Pottuz et al. 2005, Hajimahmoodi, Oveisi et al. 2008, Almeida, Stephani et al. 2010, Lelis, Ferreira et al. 2017). It is recommended that human beings should consume P4R and SY up to a maximum of around 2.5 and 4.0 mg/kg body weight, respectively (Scotter and Castle 2004). Momma et al. revealed that the presence of Ponceau 4R in the meals during pregnancy in mice did not have any teratogenic or postnatal development effect (Momma, Kawamata et al. 1981).

Metanil yellow (*Acid Yellow 36, molecular weight 375.38).* Metanil yellow, as a yellow azo dye, is used widely as a food supplement. This chemical component is synthesized from diphenylamine and diazotized metanilic acid. It has been confirmed to be used in coloring wool, silk, nylon, paper, aluminum, cleanser, ink, and so on; however, due to its toxicity, metanil yellow is not allowed to be used in nourishment materials. It has been shown that metanil yellow induces ROS in different vital organs, including the liver, kidneys, and heart (Hazra, Dome et al. 2016, Dome, Hazra et al. 2017). This component can lead to deficits briefly in the kidneys, liver, heart, intestines, gastric tissue, nervous tissue and all organ system of humans (Nagaraja and Desiraju 1993, Ramchandani, Das et al. 1997, Hazra, Dome et al. 2016, Nath, Sarkar et al. 2016, Dome, Hazra et al. 2017). It has been demonstrated that oral administration of metanil yellow can extraordinarily influence the amine levels in definite zones of the brain, including the brain stem, hypothalamus, and stratum. It is necessary to mention this point that withdrawal of metanil yellow administration was not accompanied by reversal of the adverse changes in neurotransmitters concentrations (Sarkar 2013). The administration of metanil yellow also adversely influenced the learning ability (Sarkar 2013). Several investigations have demonstrated that exposure to metanil yellow is accompanied by harms in both Purkinje cells and the granular layer of the brain.

Erythrosine B *(E 127, molecular weight 879.86).* Erythrosine B (ErB, 20,40,50,70- tetraiodofluorescein), which has a polyiodinated xanthene structure, is a cherry-pink food colorant. Erythrosine B is a unique agent with a polyiodinated xanthene structure, which is approved by the US Food and Drug Administration (FDA). Thus, this food colorant is widely utilized in drugs, cosmetics, and foods (Silbergeld and Anderson 1982, Mpountoukas, Pantazaki et al. 2010, Ganesan, Margolles-Clark et al. 2011). In the European Union, erythrosine B is utilized in a wide range of foods such as biscuits, sweets (e.g., Turkish delight), sausages, and glace and tinned cherries (Ovalioglu, Ovalioglu et al. 2020). It is suggested that erythrosine B is involved in the learning disabilities and hyperkinesis of children. Lafferman et al. (Lafferman and Silbergeld 1979) have shown that this agent inhibits dopamine transfer into animal caudate presynaptic components. Also, Logan et al. (Logan and Swanson 1979) showed that a combination of seven food colorants inhibited the aggregation of eight neurotransmitter precursors or neurotransmitters by rat brain homogenate. Erythrosine B was the only food colorant that prevented the aggregation of Dopamine neurotransmitters. It is important to note that the effective amount of erythrosine B was as low as 1 ug/ml. Mailman et al. (Mailman and Lewis 1981) revealed that this agent inhibited the transport of dopamine into rat striatum presynaptic components. However, dopamine transport was associated with the amount of the existing synaptosomes. (Levitan 1977); all of these were due to the interaction of erythrosine B with neuromuscular membranes (Augustine and Levitan 1980) and neuronal membranes (Levitan 1977). Mekkawy et al. (2000) conducted an investigation in which male rats were treated with erythrosine B (with 0.08 and 0.4 g/kg supplemented diet) for 30 days. The measurement of the

chromosomal variations of the bone marrow and the concentrations of nucleic acids and total protein at the brain and liver demonstrated changes in mutagenic exercises.

Chocolate brown HT *(E 155, CI 20285).* Chocolate brown HT benefits are in ice cream, soft drinks, piddles, flour confectionery, sauces, sugar candy, and additives (Food Additives and Contaminants Committee, 1979). It was shown that chocolate brown HT led to a statistically significant reduction in noradrenaline quantity in all of the experimental areas after 2, 3, and 4 weeks. The highest reduction in the noradrenaline quantity was discovered in the brain stem, striatum, hippocampus and cerebellum. The lowest reduction in the contents of dopamine was found in the brain stem, hypothalamus, and striatum after 4 weeks. Chocolate brown HT led to a statistically significant reduction in GABA contents which were initiated in the hippocampus, cerebral cortex, hypothalamus, brain stem, and striatum from the second to fourth week. The highest reduction in GABA contents was detected in the hypothalamus and striatum. Chocolate brown HT led to a statistically significant reduction in the serotonin quantity which was initiated from the third and four weeks in all brain areas. The highest reduction in the contents of serotonin was found in the hypothalamus and striatum after 4 weeks. The oral consumption of chocolate brown HT was associated with the prevention of ATP constitution which led to the reduction of synthesis of DA, NE, and gamma aminobutyric acid in the presynaptic neurons (Bawazir 2012). A mild level of growth retardation was found in the males at the 3.0 ~ dietary levels; however, the pigments were found in definite organs, especially in the liver Kupffer cells, at the maximal level diet 3%, along with the tubules of the kidney at both the 1 and 3 levels (Gaunt, Hall et al. 1967).

Carmoisine *(E122, molecular weight 502.431).* Carmoisine is a food colorant of azo dye group which is red to maroon and has an aromatic structure. Carmoisine is usually found in the form of disodium salt. According to the fact that carmoisine is approved by US Food and Drug Administration (FDA), it is widely utilized in cosmetics, paper, textile, food, pharmaceutical, and agrochemical industries (Snehalatha, Ravikumar et al. 2009). Carmoisine, even at low doses, is able to modify biochemical markers in important parts of the body. Carmoisine changes the structure of hemoglobin, which leads to the reduction of the helical composition Basu, A., & Kumar, G. S. (2015). The main metabolite of carmoisine is sulfanilic acid (Chung, Stevens et al. 1992). Whenever nitrite compounds exist in several foods combined, they transform into nitrosamines, which are carcinogenic (Grosse, Baan et al. 2006). According to the classification of International Agency for Research on Cancer, azo dyes such as carmoisine are placed in the category 3 of carcinogens Carmoisine can reduce the fuel metabolism in the liver (Montaser and Alkafafy 2013). Briefly, hydrophobic azo dyes are not safe for use, due to inducing tumors in the body systems(Golka, Kopps et al. 2004).

Brilliant black BN *(E 151, molecular weight 867.68).* It has been demonstrated that brilliant black BN inhibits CVA6, CVA16, and EV71 strains. Comparison of E151 with the other dyes tested showed the maximal efficacy in the blocking entry of the virus (Meng, Jia et al. 2019).

BBG *(Brilliant blue FCF or E 133).* BBG is a water-soluble, functional, and structural analogue of FD&C blue dye No. 1. This FDA-approved agent is widely utilized as a coloring agent and food additive which has shown any toxicity in humans at doses up to 1g/kg/d in humans Federal Register, Government Printing Office website. Available: http://edocket.access.gpo.gov/2006/06-3307.htm. Accessed 2012 Jun 1. The safe doses of BBG might decrease the neural injuries, or clinically applicable. In addition, BBG can synthesize proinflammatory agents on defense cells that express P2X7 and Influences brain tissue after TBI. (Gourine, Dale et al. 2007). Carmo et al. (Carmo, Menezes et al. 2014) mentioned that administration of BBG (45 mg/kg, every 48 h, for 14 days) showed that oral gavage of brilliant blue FCF has statistically significant effects on the survival of the neurons and aggregation of intracellular aβ precursor protein (app) in the hippocampal portion (Carmo, Menezes et al. 2014). Chronic systemic administration of BBG was associated with cognitive impairment and weakened spatial memory deficit in an AD mouse model. The administration of BBG entirely inversed the inhibitory effects of Ab on the growth and spin genesis of the dendrites. Moreover, this agent might have neuroprotective roles in AD through an independent mechanism of P2X7 based on its chemical properties (Chen, Hu et al. 2014).

Allura Red *(E 129, molecular weight 496.42).* Allura Red is widely used in candies, ice cream, drinks, and bakery products (3). According to a previous study, Vorhees reported that the total number of the glial cells and neurons after exposure to high dose Allura Red was decreased by 50-60% (Vorhees, Butcher et al. 1983). In contrast, the administration of the low-dose of Allura Red had no effect on the dendritic length (Vorhees, Butcher et al. 1983). However, the total length of the dendrites in the high-dose Alora red group was reduced by 40% compared to the distilled water group. (Vorhees, Butcher et al. 1983). In addition, Noorafshan et al showed that the high dose of Allura Red leads to several neurological disorders such as multiple sclerosis, brain damage, and ADHD (Noorafshan, Hashemi et al. 2018). Vorhees et al. (Vorhees, Butcher et al. 1983) demonstrated brain weight loss in mice whose mothers received red number 40 mg/kg/day for two weeks. Likewise, Bawazir (Bawazir 2016) showed that the administration of Allura Red 200 mg/kg for 8 weeks had adverse effects on histology of brain

tissue. Administration of Allura Red was accompanied with a noticeable reduction in the substance of histamine, GABA, and 5-hydroxyindoleacetic acid in all of the examined regions at different times. Also, Allura Red decreased the content of GSH and MDA in the kidney and brain. In the brain, inhibition of endogenous antioxidant defense enzymes is mediated by these free radicals, which then causes brain tissue damage (Vorhees, Butcher et al. 1983). Allura Red caused a decrease in the byazoreductase enzymes in the liver cells and in intestinal bacteria through the release of aromatic amines to the organism that caused hyperactivity and distraction in children, while in adults it caused frequent headaches (Hawley and Buckley 1976, Rafii, Hall et al. 1997, Huang, Chiu et al. 2003). Moreover, it has been shown that Allura Red was not carcinogenic in mice (Borzelleca, Olson et al. 1991) or rats (Borzelleca, Olson et al. 1989).

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Comparative study of laws, standards and quality control systems related to rice

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Abstract

Tayyeb food brand has been introduced based on Islamic principles with the aim of achieving a comprehensive and superior process standard in the food field. Rice is the main food of more than half of the world's population and is one of the two strategic foods. Tayyeb rice is the highest quality rice that can be produced by physical and spiritual protocols. According to Tayyeb, all the factors related to the production process in the production chain until consumption must be control and manage to reach high-quality rice. In the first step, all the standards related to the production and processing of the product must be evaluated in order to achieve the best standard conditions. In this research, a comparative comparison of Iran's standards with the standards approved by international reference organizations (International Organization and Codex Standard Development) was compiled in order to achieve the optimal conditions for rice production and processing with the highest quality standards for rice production. According to the comparison made in the international standards, the characteristics of rice in the Codex standard and ISO are completely consistent, while the international and national standards have significant differences with all of them. And in most cases, Iran's national standard laws have been strict. In other words, the obligation to comply with domestic laws and standards also covers international standards.

Keywords: Rice, Tayyeb food, Iranian National Standard, Codex, ISO.

Necessity of metrology in “Tayyeb” food safety and quality Assessment

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Abstract

Introduction-Food safety has a direct impact on individual and social health, and considering the globalization of food supply chains from farm to fork, the use of new approach of food integrity in national and international standards codification as the most appropriate method in food safety and security is suggested. Given that safety is one of the “Tayyeb” food aspects, it is necessary that the content of contaminants is consistent with the limits imposed by the law and that the measurements of these contaminants are accurate. To verify these requirements, it is necessary to apply metrological concepts to food analyses to provide sensitive, accurate and standardized analytical methods and to harmonize their application in analytical laboratories.

Material and Methods (Or Methodology)- This review examines the role of metrology in the new approach of food integrity and its importance in food safety assessment with particular focus on “Tayyeb Food”. So, related papers from 2010 to 2022 were searched in Google Scholar, PubMed, Web of Science databases. Among the 7 articles found in this regard, 4 related articles were used.

Conclusion-In order to ensure that the food we eat is safe from Tayyeb's point of view and its characteristics are according to the relevant standards, it is necessary to conduct tests using different devices, and if these devices don't have the accuracy or are not calibrated, the obtained numbers will not be reliable and as a result, it may not be “Tayyeb”. so, application of metrology to measure food chemical and microbial risks such as pollutants, heavy metals, residues of veterinary drugs, food additives, Microbial toxins, etc. is necessary to grant a Tayyeb brand to foods.

Keywords: Metrology, food safety, Tayyeb food

Evaluation of heavy metals in refined table salt and rock salt

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Abstract

In recent years, salt purification has become a challenging issue in society, which has many supporters and opponents, and each of them presents different arguments in this matter; This is while a comprehensive and complete scientific research has not been done to answer this created bipolarity. In this research, an attempt has been made to evaluate the efficiency of purification by recrystallization method by comparing heavy metals as an important quality parameter. Heavy metals were measured by ICP-OES (Inductively Coupled Plasma Spectroscopy). The results of this research show that purification by recrystallization method has not been effective in reducing heavy metals, and in some cases it has even increased them, such as barium.

Keywords: Refined salt, recrystallization, heavy metals, rock salt

Investigation and strategies to reduce sugar beet waste

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Abstract

The process of producing agricultural products has been a time-consuming and costly process. It is obvious that during the production of the final product, some plant residues and residues are produced. These wastes mainly cause environmental problems and eliminate them at great expense. The existence of an unusual amount of agricultural waste is one of the problems and threats to the progress of achieving food security in human societies, which is harvested, transported and transported under inappropriate conditions and methods. Transportation, storage, distribution and consumption are turned into waste and removed from the reach of the consumer. From this, it seems that by paying special attention to the post-harvest care and technologies of agricultural products and the development of transformation industries, the waste of agricultural products can be significantly reduced. By reducing the waste of agricultural products, in addition to returning a significant volume of products to the consumption cycle, great steps are also taken in the direction of increasing the productivity of production resources, including water and other production inputs (soil, fertilizer, fertilizer, and fuel).

Keywords: Sugar beet ،waste reduction ،silage ،Weight waste

Detection of Haram tissue (spinal cord and spleen) in cooked sausages using immunohistochemical technique

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Abstract

Introduction: The use of unauthorized tissues in raw and heated meat products, creates problems for consumers, and the control of these products can be one of the most important issues related to the health of consumers in the country. The purpose of this study is to detect spinal cord and spleen (Haram tissues) in sausages using specific antibodies with immunohistochemical technique and comparing this technique with conventional histological techniques.
Methodology: In this study, sausage samples without these tissues were prepared as control samples and samples containing spinal cord and spleen tissues were prepared separately as test samples in the laboratory. Then, the tissue was fixed in 10% formalin and was prepared according to the usual histological method, and the slides were stained by hematoxylin-eosin and immunohistochemical methods using the specific antibody of each of the tissues and examined by light microscope.
Results: In tissue sections stained with hematoxylin-eosin due to the heat of the sausage and disintegration of the tissues, spinal cord tissue and spleen could not be identified but the sections of sausages containing spinal cord and spleen stained by immunohistochemistry method a brown color was observed in the background of the slide, which indicates the presence of a specific tissue in the section.
Conclusion: The immunohistochemical method with tissue-specific antibody is one of the best methods in detecting the presence of Haram and unauthorized tissue in cooked sausages.

Keywords: Sausage, Immunohistochemistry, Haram tissue

A3- Fundamental and practical research

Human flourishing and growth with Tayyeb sustenance

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Abstract

Introduction: Life is given to all creatures by God. Therefore, in its continuation, they need a tool. The absolute tools that man needs to continue his life is known as sustenance. According to some definitions, sustenance is continuous giving, which is sometimes worldly and sometimes otherworldly, and of course, sometimes it is also referred to as provision, and also the food that enters the stomach and is fed with it also called sustenance. Sustenance in the culture of the Quran and hadiths means the provider of life, and depending on the type of life, the type of sustenance is also different.

Materials and methods: This research is a study within religion, which examines and analyzes the issues in the field of halal and tayyeb by examining religious texts, the Holy Quran and the Sunnah, and recognizing the studies done, the semantics of tayyeb and Classification and explanation of phrases related to the word Tayyeb sustenance was done.

Findings and conclusions: Some commentators have considered the mention of the halal for sustenance to mean that sustenance includes both halal and haram; Otherwise, the mention of this word would be canceled. But it is not. So Halal is an explanatory clause that is equal to its binding, and the point of mentioning it is to point out that the halal and Tayyeb does not leave an excuse for someone who wants to become a monk. Therefore, the sustenance that is given and determined by God is halal in principle, but humans make a part of it haraam through improper buying and selling, corrupt exchanges, and haram acts. What man exploits in the forbidden way is not God s sustenance, and the means of sin should not be attributed to God, because God himself did not attribute the sins of his servants to himself and denied the law of the ugly act from himself and said: « قُلْ إِنَّ اللَّهَ لايَأْمُرُبِالْفَحْشاءِ، أَ تَقُولُونَ عَلَى اللَّهِ ما لاتَعْلَمُونَ (A raf/28). It can be said that the meaning of Halal and Tayyeb is that sustenance should be in such a way that human nature is not deprived of it, human nature considers it pure and likes it, and this is the criterion of Islamic Halal.

Keywords: sustenance, ،Tayyeb, halal, growth.

The principles of pistachio production based on the principle of being Halal

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Abstract

Introduction: Halal is a type of credit process that specifies a certain degree of safety and quality assurance by providing a halal certificate for the product. In the ontological view of Islam, the system of comprehensive monitoring of the production, processing and consumption of food products is defined by the word Tayyeb, which includes the attributes of cleanliness and purity and being away from any pollution (material and spiritual). As a result, it is halal, according to human taste and nature, enjoyable and has beneficial and constructive effects on the body and soul. Pistachios are of special importance and prestige among Iran's export products. One of the main components of Pistachio Tayyeb is to comply with the principle of Halal and Shari'a and legal requirements in the process of pistachio production and consumption.

Methodology: In this research, based on the information extracted from religious and scientific sources (Qur'an, hadiths, Shariah rules, laws, standards and quality control systems), the criteria of the Tayyab quality control system for the strategic pistachio product were presented, focusing on the Halal principle.

Findings and conclusions: One of the main components of Tayyeb pistachio is to comply with the principle of Halal and Shari'a and legal requirements in the process of pistachio production and consumption. Based on the principle of Halal in the production of Tayyeb pistachios, raw materials, infrastructure and processes used for the chain of production to consumption of Tayyeb products must be produced within the framework of Sharia guidelines and rules, divine rights must be respected during the chain of production to consumption. Public rights and people's rights must be respected along the food chain. Compliance with environmental, cultural and social requirements and avoiding any cultural and social disturbance for neighbors, etc., and any waste of resources, funds and facilities related to the chain should be prevented.

Keywords: Halal, Tayyab, pistachio, assessment, legal requirements, Shariah requirements

Producing Tayyeb bread, Islamic and legal requirements

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Abstract:

Introduction: Bread, as the dominant food item, has a major share in the consumption basket of households. Bread is the basic and main food of Iranians, especially low-income families, and it is also the cheapest item in the daily diet. Therefore, it is very important to be halal and Tayyeb. Tayyeb food has all the characteristics of halal food and other signs, and it has distinctive indicators with them in the final product and in the product production process. Tayyeb means delicious, interesting, pleasant, original, fragrant, pure, blessed and has material and spiritual effects. Food materials and products that follow the indicators derived from Islamic teachings and rulings throughout the chain of production and consumption and have the characteristics mentioned in the meaning of "Tayyeb" are called “Tayyeb food”.

Methodology: The present article is an analytical study that, with a comprehensive review of scientific and religious sources, the components and indicators of the principle of halit in all stages of bread production, including 6 stages before planting, sowing, harvesting, storage, bakery. Has been studied.

Findings and conclusions: Tayyeb emblem was formed based on the five principles of blessing, attractiveness, originality, being Halal and health. Achieving the principle of solution in bread production can be realized by observing the components such as legal and Shariah permits, public rights, business rights and limits, employees' and customers' rights, and raw materials and processes. Being halal principle, which actually shows the halalness of the bread production chain and has indicators such as job licenses for product production, verification of legal ownership of resources in the workplace, compliance with laws and regulations related to the environment, payment of duties, insurance and tax is compliance with Sharia issues and... These indicators are defined in the scope of permits and resources, public rights, sewage and waste management, green space, storage and transportation of materials, health and safety of premises and buildings, welfare facilities, work organization, ethical charter, employees and fair trade.

Keywords: Bread, Halal, Tayyeb, production chain

A reflection on the teachings of Islam in the field of human health

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Abstract

The religion of Islam is the most complete and the last divine religion that takes into account all aspects of human life and has communicated divine commands to them based on the needs of humans through the Prophet (PBUH). The purpose of the research is to explain the religious teachings of Islam in many areas of human body and mind. The problem of the research is Islam's approach to the physical and spiritual needs of human beings, which is done in a descriptive-analytical way. The findings of the research show that man is a two-dimensional being consisting of physical and spiritual dimensions. Human physical needs include; Needs related to food and nutrition, needs related to body parts, needs related to sexual relations, needs related to health and needs related to beauty, and his spiritual needs include; There are moral, behavioral and belief needs that each of these cases must be answered by a precise and knowledgeable reference to the human condition. Therefore, with regard to the eternity and comprehensiveness of Islamic laws and the comprehensive theory of Islam, which originates from two components: the comprehensiveness of the sources of Islamic teachings (including the Qur'an and the traditions of the infallible elders, peace be upon them) and the comprehensiveness of the teachings of the Islamic religion, the correct provision of the aforementioned needs based on religious instructions , will lead to excellence, true happiness and health of soul and body of humans.

Keywords: Islam, teachings, health, body, soul.

Investigating the halal principle in the supply of Tayyeb meat

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Abstract

Introduction: Meat is one of the most important food products that is considered with great precision and sensitivity in the halal label and has a wide market all over the world. Meat is one of the most important and widely consumed animal products used by humans in a simple and unchanged form or as processed products. Even in religious foundations, meat has a special place, so there is a lot of emphasis on Sharia slaughtering and halal meat. According to the principles of Tayyeb, if any product wants to be Tayyeb, it must have the condition of halal, but being Halal from the point of view of Tayyeb does not end only at the slaughtering stage and includes the entire chain of production to consumption. Therefore, in the present study, the principle of halal meat in its production chain has been investigated.

Methodology: Factors affecting the quality of meat during the production chain (before slaughter, during slaughter and processing and preparation of the product) were investigated and all the basic points found in religious sources and national and international standards related to meat quality were investigated and presented in detail.

Findings and conclusions: An important step will be taken in the production of Tayyeb meat If the principle of being halal is observed in the entire chain of production until the consumption of meat. Because the Halal principle is one of the component of the Tayyeb brand and the red line of Tayyeb meat production. In order to comply with the principle of Halal in the stage of livestock breeding, indicators such as compliance and adherence to Islamic standards and rules, compliance with animal rights, and the legitimacy of all property and business licenses are considered. In the stage of animal slaughter and meat storage, indicators such as property and occupational legitimacy, attention to the lack of fatigue and stress of the animal before slaughter, the presence of a health official, the existence of a valid medical examination card for each worker and compliance with all the principles of Sharia slaughter are mandatory. Also, in the Islamic religion, there are some organs and appendages of halal meat animals, which are forbidden to eat.

Keywords: Halal, Tayyab, meat, chain of production to consumption

The value of milk and dairy products in different diets

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Abstract:

This article examines the health aspects of cow's milk and dairy products. Milk is a source of macronutrients and micronutrients. Dairy products have many effects on growth and development. milk consumption in children's linear growth; It is effective in the treatment of malnutrition and the secular process of increasing the height of adults. Mechanisms for the growth-promoting effects of milk have been proposed. Consumption of milk and dairy products has a great effect on bone health. In this article, national recommendations related to milk consumption are mentioned. Since the component of health is one of the main principles of Tayyeb emblem, the use of high-quality milk and dairy products in different diets for different people is a step in the direction of protecting the body against certain diseases and also in line with Tayyeb emblem.

Keywords: Health, milk, dairy products, nutrients

Tayyib Concept in Case of Pistachio (*Pistacia vera*) Supply Chain: Production, Processing & Distribution

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Abstract

Background: Growing Muslim population intend to consume Halal food products. In Quran, in context of food, the term 'Halal' is accompanied with 'Tayyib' which has been addressed in many publications in recent years. Muslims believe that consuming Tayyib food besides being safe and of superb quality, could guaranty positive effects on their character and personality.
Scope and approach: Since Tayyib as a new trend and a marketing opportunity is going to be widespread in food industries, its concept, goals and related standards should be defined precisely. In this article, supply chain of pistachio as a strategic product in Iran was assessed in order to implement Tayyib pistachio risk management plan.
Key findings and conclusion: This study, defines five Tayyib indices (Halalness, Healthiness and Safety, Originality, Desirability and Attractiveness, Efficacy) based on definition of Tayyib concept retrieved from Quran and related publications. With respect to described Tayyib indices, critical factors in pistachio supply chain were clarified, that could be used as the first step for implementation of Tayyib risk management plan in pistachio production.

Keywords: Tayyib, Halal, Pistachio, Supply Chain

Highlights

- Tayyib main prospective is to create peace of mind and comfortable feeling when food is taken besides fulfilling food safety and quality requirements.
- GAP, GMP, HACCP and other accredited forms will be a prerequisite for the Tayyib certification.
- Tayyib label ensure complete compliance with Sharia requirements through all parts of supply chain, not only the final product.
- Issues and critical factors related to Tayyib pistachio supply chain were identified and addressed.

1. Introduction

Muslims are the only major religious group projected to increase faster than the world's population as a whole. If current demographic trends continue, by the middle of the 21st century (2050), the world's total population and Muslim population are expected to rise to 9.3 billion and 2.8 billion (or 30% of the total population), respectively (Pew Research Center, 2015). Today, the trend of Halal food consumption increases with a 7.4% rate of increase per year (Rayner et al., 2017). Rapid growth in global Halal food products demand in recent years shows necessity of paying close attention to the development of Halal food and Tayyib standards. It is estimated that the global Halal market size will reach US$ 10 trillion by 2030 (R. Ali et al., 2017). Researchers found that Muslims are interested to buy and consume Halal food because they believe that it is safe, hygienic and of high quality, so they would live longer, have better future, feel happier (physically and spiritually) and be more successful and self-satisfied (connected with the purpose of life) (Arsil et al., 2018). Halal is an Arabic word that means "lawful" or "permissible" and covers all Muslim actions including: eating, wearing, seeing and talking (Alzeer et al., 2018). Allah SWT has made it compulsory for Muslims to consume food that is lawful (*Halal*) and of good quality (*Tayyib*). Tayyib or 'Good things' refers to pure, clean, comply with Sharia, good, superb (Neio Demirci et al., 2016), wholesome, nutritious and safe (Yahya et al., 2016). As Allah SWT says in holy Quran: ***O you who believe (who are âmenû)! Eat of the lawful and good things that We have provided you with, and be grateful to Allah, if it is indeed He Whom you serve.*** (Al-Baqarah-The Cow, 2:172). Muslim believe that consuming Halal and Tayyib food will ensure physical health and alertness besides providing a push factor to help increasing the quality of one's Piety and Gratefulness (Yunus et al., 2010). So what we consume would affect our character, personality

and supplication acceptance (Alzeer et al., 2018). In fact, Quran supports the concept of "you are what you eat": ***O Messengers! Eat of the good (pure and lawful blessings) and do improving deeds (that purify the soul). Surely I know the best what you do.*** (Al-Mu'minin- The Believers, 23:51). In recent years, many researchers have been described and reviewed the concept of Halal and Tayyib (Alzeer et al., 2018; Arif & Sidek, 2015; Mostafa, 2020) and analyzed its application in different aspects (Othman et al., 2018; Yahya et al., 2016; Yunus et al., 2010; Zainuddin & Shariff, 2016). In order to ensure that the food product is utterly Halal during different stages of production, processing, handling, storing, and distribution, a specific management system (Tayyib) is required. In case of pistachio supply chain, particularized practical description and application of Tayyib have not been clarified. Accordingly, this study assesses the Halal and Tayyib food supply chain (HTFSC) in Pistachio production, processing and distribution as the case study to identify critical factors for implementation of Halal and Tayyib risk management plan (HTRMP).

2. Pistachio Supply Chain

Pistachio supply chain consists of production, processing and distribution. Production covers all orchard activities including plantation, budding, pruning, irrigation, using pesticides and fertilizers, harvesting etc. The most important issues in this stage are to select best species, analysis the quality of soil and water, avoid formation of aflatoxin, use proper methods for controlling pests and nourishing trees and finally collect in suitable time for each species and avoid mixing them. The most important postharvest operations include handling, transportation, green hull removal, dehydration, roasting, bulk storage and packaging. The main issue in this session is about controlling moisture content of pistachio in order to prevent aflatoxin information. Besides that, selecting proper method, equipment and energy resources and adjusting drying and roasting time/temperature parameters are important factors in maintaining pistachio quality (Sheikhshoaei et al., 2019; Sonmezdag et al., 2019). During storage and distribution, temperature and humidity are two key factors affecting pistachio quality, another factor that can influence the halalness of pistachio is the risk of cross contamination with non Tayyib elements (Supian, 2018). Thus, in order to eliminate the risk of Halal status become contaminated with non-halal factors, it is crucial to implement HTRMP and determine and monitor Halal and Tayyib critical control points (HTCCPs) (Yahya et al., 2016). For implementing HTRMP, continuous training on both Halal and Tayyib (safety and quality) is necessary for human resources development in Tayyib supply chain (Ahmad et al., 2017; M. H. Ali & Suleiman, 2018; Hashim & Shariff, 2016).

3. Methodology

Tayyib features were defined based on literature researches and comprehensive meanings intended by the Quran using semantic network design. In the next step, by getting an overview of the latest developments on Halal and Tayyib assurance systems and compliance with Sharia principles, five Tayyib indices were determined. Then, quality control checklists were prepared regarding the Tayyib indices, in order to assess implementation of HTRMP in pistachio supply chain (Production, Processing and Distribution). In the final stage, qualitative method of Ahmad, et al (2017) were employed for data collection. Five pistachio orchards and their processing pilots were inspected and in-depth interviews were conducted with individuals who involve directly with the pistachio production, processing and distribution to identify critical factors in implementation HTRMP in pistachio supply chain. A summary of the expert respondents taking part in the study is provided in Table 1.

Table 1

Background of the experts

Position	Background/Section	Length of experience
Manager A	Organic Pistachio Orchard & Processing line/Private sector	18 Years
Manager B	Green Pistachio Orchard & Processing line/ Government sector	20 Years
Manager C	Green Pistachio Orchard, Processing line & Distribution/ Private sector	17 Years
Manager D	Conventional Pistachio Orchard/ Government Sector	21 Years

Manager E	Conventional Pistachio Orchard, Processing line & Distribution/ Private sector	25 Years
Sharia Scholar A	Government sector	10 Years
Sharia Scholar B	Private sector	15 Years

4. Findings

4.1. The Tayyib Concept

The concept of Tayyib, with regard to food, represents a process in which food passes through to accomplish both objectives: maximum hygiene (clean) and minimum contamination (pure) without any potential toxic, unclean (Najis) and impure (Kabith) ingredients (Alzeer et al., 2018, 2020). Any contaminated food with pathogenic microorganisms or with potentially toxic ingredients that may have a risk to human health is considered non-Tayyib, ultimately non-Halal and cannot be used for eating purposes (Kurniadi & Frediansyah, 2017). Besides being superb in safety and quality (nutritious, having necessary vitamins and minerals, good taste etc.), Tayyib definition is closely linked with the purity of one's heart (intentions, words, beliefs) in doing something (Yunus et al., 2010); and covers various circumstances. Tayyib food could be achieved by considering all these aspects throughout supply chain as shown in figure 1.

Ensuring consumers that the food product they want to buy is safe, hygienic, of high quality and produced in the way that has considered all aspects of ethics and morals, makes them feel better, happier (physically and spiritually) and more self-satisfied (Al-Ansi et al., 2019; Arsil et al., 2018). It is exactly the point that makes Tayyib food unique; to create a comfortable feeling when is taken. The comfortable feeling cannot easily be achieved just by eating safe, healthy and pleasant food, we would feel comfort if what we have complies with our beliefs (Alzeer et al., 2018). Researchers suggest that comfort food could improve our mood and behavior and give us sense of wellbeing (Neio Demirci et al., 2016). Hence, consumption the Tayyib food product will provide positive effects on mood, attitude, health and faith practicing (Alzeer et al., 2018, 2020; Yahya et al., 2016). Precise selection of food and taking care of nutrition is strongly related with pious practice (Latif et al., 2014). The opposite of Tayyib is 'Kabith' that refers to any repulsive and disgusting matter which cannot be used as a source of food (such as scorpions, lizards, beetles, bats, pests and mice), and is harmful, carcinogenic or toxic for body (Alzeer et al., 2018). Allah swt strongly advise to avoid Khabith: ***O messenger! Say to them: the bad things (Khabith) and good things (Tayyib) are not equal, even though the abundance of Khabith might make you pleased with them. You of understanding, beware of disobeying Allah; then you will attain true success*** (Al-Ma'idah- The Table Spread, 5:100). Uncomfortable feeling arising from consuming Khabith is due to disagreement between food and human believe that is a natural reflection among people following special lifestyle such as Halal, Kosher, vegan etc. It is unhealthy and may cause stomach discomfort (Alzeer et al., 2018). Researches confirmed that negative expectations can lead to increase in nocebo effect during the presentation of repulsive conditions (Schienle et al., 2018). The stress resulting from negative expectation will increase pro-inflammatory signaling and induce reactive oxygen species (ROS) generation which lead to oxidative damage and immune deficiency (Adamo, 2017). Scientists suggest that lifestyle and psychological stress are two key factors in development of various diseases (Sharif et al., 2019). Hence for Muslim, consuming Tayyib food would present a safe path to accomplish health, comfort and satisfaction. Recent Islamic economy reports highlight Tayyib as a new trend and a marketing opportunity and refer to Tayyib as a possible value adding factor (ITC, 2015).

4.2. Tayyib Issues alongst the Food Supply Chain

Most of food ingredients are Halal, as a subject, however the methods, location, and processes used to transform raw materials into food or to transform food into other forms are often non-Tayyib (Alzeer et al., 2020). It reveals the importance of reviewing supply chain from Tayyib point of view as a comprehensive system. Tayyib food supply chain management consists of four interrelated sections including Inputs, Processes, Controls and Outputs which must be Sharia compliances (Zainuddin & Shariff, 2016);

1. Inputs that are categorized as the '8 Ms'; man (workers and people), materials (raw materials and ingredients), machines (equipment and appliances), methods, management (staff and employers), management information system (ICT and system operation), money (financial support), and management of environment and technology (Antara et al., 2016; Othman et al., 2018). This section implies on considering all management aspects in planning, leading and organizing in order to set up a Tayyib supply chain system and fulfilling the standard requirements.

2. Processes of the entire supply chain apart from manufacturing that must be Halal certified (Zainuddin & Shariff, 2016), and not contaminated with non-Halal (Othman et al., 2018). It covers all inbound and outbound transportation services and its modes; planting, irrigation, harvesting, processing, stacking and storage conditions; receiving, handling and distribution activities with clear process flow diagram to ease tracking every movement as clarified in the standard MS2400: 2010. In this section is necessary to describe a detailed and precise HTRMP as a part of the processes to identify all possible risk of contamination and verify them as halal compliances.

3. Controls subdivide into Sharia-based controls to ensure halalness aspects as in the Islamic rules; and technical controls to assure the integrity and technicalities (Tayyib) aspects of managing all activities (Zainuddin & Shariff, 2016). In terms of Sharia-based controls, all situations with potential risk of cross contamination must be considered in HTRMP and be avoided. For instance, Halal and non-Halal products must be segregated during processing, storage, transportation, distribution and logistics processes. From technical point of view, Good Agriculture Practices (GAP), Good Hygiene Practices (GHP), Good Manufacturing Practices (GMP) and Hazard Analysis Critical Control Points (HACCP) are compulsory requirements in Halal and Tayyib food preparation (Alzeer et al., 2020; Yahya et al., 2016).

4. Outputs or services must be Halal with integrity to assure wholesomeness and Tayyibness (Zainuddin & Shariff, 2016).

Since Tayyib defined as a management system considering all aspects of safety, quality and halalness during food supply chain besides compliance with principles of sustainable development, human rights and animal welfare, it is too close to organic food in meaning. Like organic food, Tayyib food must be produced without the use of synthetic fertilizers and pesticides, genetically modified ingredients and methods, growth hormones, irritations and antibiotics. Thus, Tayyib food is part of the 'green consumerism movements' as well as organic food, and could satisfy all types of consumers who concern about ethics; protecting ecosystem and natural environment; animal welfare (Neio Demirci et al., 2016); using additives, chemicals, GM ingredients and pesticides; and natural taste. However, embedding the concept of Tayyib in the food supply chain practices makes it supreme.

4.3. Tayyib Indices

Based on the findings, five Tayyib indices were defined as:

1. Halalness- Being in compliance with Sharia principles in all aspects.

2. Healthiness and Safety- Being beneficial for human body and spirit (products, procedures and services), being advantageous for nature and environment, human community and culture, being safe and free from potential toxic, unclean (Najis) and impure (Kabith) ingredients and any kinds of contamination (physical, chemical, microbiological, spiritual and behavioral).

3. Originality- Being natural (GMO free), Application of local resources (raw material, energy, employee and …), combination of indigenous technical knowledge strength with modern technology, being free from any kinds of fraud (raw material, processes, final product and …), being honest in providing information (reports, documentation, advertisement and …).

4. Desirability and Attractiveness- In relation to the human soul: delectable and hearty, delicious and without physical and mental harms, In relation to other objects: clean in appearance, with clean intrinsic attributes. Feeling joy and comfort.

5. Efficacy- Creating value in different aspects of life (spiritual, life style and …), avoiding squander (time, human resources, energy, funds and…), improving productivity through making the process and products economic and environmental friendly and sustainable.

4.4. Critical issues in Tayyib Pistachio Risk Management Plan

Since pistachio as a strategic product has a special place from economical and nutritional points of view (Yahyavi et al., 2020), so defining its Tayyib production aspects is of great importance. As mentioned before, the main objective of the Tayyib managment system is to minimize any forms of contamination and maximize hygiene while complying with Islamic principles. In order to implement HTCCP and identify potential risk in the Tayyib pistachio supply chain, the application of HTRMP is needed at all stages involved (Yahya et al., 2016). The first general principle of HTRMP that was outlined by the Department of Standards Malaysia in MS2400-2:2010 is: 'Identification of Halala-Toyyiban potential contaminant and/or precursor under supervision of Tayyib Committee to develop a comprehensive process operations flow diagram containing all potential contaminant and/or precursor related with the process' (Department of Standards Malaysia, 2010). The list of critical issues as potential contaminant and/or precursor in different stages of pistachio supply chain (orchard, processing and distribution) concerning the five Tayyib indices are presented in Tables 2-4.

Table 2

Critical Factors in Tayyib Pistachio Production (Orchard)

Section	Critical Issues	References
Human Resources	1. Satisfaction of employees with their salaries and welfare amenities (on-time payment, observance of rights and fairness).	(Alzeer et al., 2020; Hetschko et al., 2020; Min et al., 2019).
	2. Employment of local workers has priority over others.	
	3. Not consuming Alcohol, Drugs and Cigarette in pistachio orchard.	(Antara et al., 2016)
	4. Prohibition of child labor. Child labor is a public health (physical and mental) concern.	(Ibrahim et al., 2018)
	5. Training (both in understanding Sharia principles and improving technical and management aspects). It is an important factor for human resource development in the Tayyib/Halal industry. Updating employees' knowledge and skill is needed to improve their job effectiveness.	(Ahmad et al., 2017; M. H. Ali & Suleiman, 2018; Hashim & Shariff, 2016)
	6. Personnel regular health checkup, adhering to cleanliness standards and following acceptable behavior (The workers should apply the ethics code and 'good hygiene practices').	(Kwag & Ko, 2019; Othman et al., 2018)
	7. Establishing the internal audit committee and appointing one executive in Islamic affairs to handle and ensure that the Tayyib procedure is complied.	(Othman et al., 2018)
Financial issues	1. Supplying Halal financial resources.	(Antara et al., 2016)
	2. Fair contracts.	(Min et al., 2019)
Plantation	1. Observing safe distance from Hararm and non-Tayyib neighbors, crowded road, polluted area, etc.	(Kwag & Ko, 2019)
	2. Use of Tayyib/Organic seed/seedling instead of GMO seed/seedling. Current status of GM crops is highly critical and non-Halal and may create an uncomfortable feeling for the consumer. Tayyib pistachio seedlings must be intact, free of disease and harmful substances, and must be produced in clean areas.	(Alzeer et al., 2018; Şimşek & Gülsoy, 2018)
	3. Analyzing the climate, soil and water suitability before plantation.	(Pourmohammadali et al., 2019)

Section	Critical Issues	References
	4. Selecting the most resistant and efficient species after data analyzing (indigenous species have priority over others).	
Precipitation	1. Avoiding irrigation with any kinds of sewage.	(Alzeer et al., 2020)
	2. Applying the most efficient irrigation system in order to prevent squandering water resource (replacing sprinkler and flood irrigation in traditional farm by more efficient ones like drip irrigation).	
	3. Managing irrigation by using soil moisture monitoring and evapotranspiration (ET). Pistachio production yield, concentration of volatile compounds and intensities of odor active compounds are related to irrigation condition and management.	(Şahan & Bozkurt, 2020)
Pest Control	1. Following the IPM program.	
	2. In Islamic prospective, all hazardous chemical treatment methods must be replaced by safe physical and biological ones (most of pesticides are toxic and potentially hazardous to humans, animals, and the environment).	(Sabarwal et al., 2018)
Using Fertilizer	1. Avoiding use of chemical fertilizers that can be harmful for human and environment.	(Sabarwal et al., 2018)
	2. Manure is a Halal replacer for chemical substances. Farm manure must thoroughly be composted to meet safe sanitary standards of acceptable microbial limits.	(Alzeer et al., 2020)
	3. Untreated raw manure derived from an animal is considered Najis, but after decomposition the treated manure is considered Halal.	(Mohd Kashim et al., 2018)
	4. It is not approved to use urban household garbage, industrial and hospital wastes or human feces as fertilizer.	(Alzeer et al., 2020)
	5. Applying biological fertilization. Microbial fertilizer is useful for the improvement of pistachio soil. Bacteria, actinomycetes, mycorrhizae, algae and worms can be evaluated in Tayyib (Green) pistachio farming.	(Şimşek & Gülsoy, 2018)
Harvesting	1. Prevention from mixing non-Tayyib with Tayyib pistachios.	(Neio Demirci et al., 2016)
	2. Collecting different varieties based on its precise ripening time (at optimum maturity and quality, around 13 to 20 September).	
	3. Direct transportation to processing line (factory) within 8 hours of harvest (fast lane only).	
	4. Separation of facilities and equipment from Haram items.	
	5. Cleaning all the equipment following Shariah ritual cleansing principles.	(FAO/IAEA, 2001)
		(Kwag & Ko, 2019)
		(Kwag & Ko, 2019)

Table 3

Critical Factors in Tayyib Pistachio Processing

Section	Critical Issues	References
Human Resources	1. As mentioned in Table 2.	
Financial issues	1. As mentioned in Table 2.	
Handling & Transportation	1. Keeping transportation facilities and equipment separated from Haram/non-Tayyib issues, free from any filth/dirt/najis or impose hazards to health. 2. Cleaning all the equipment following Shariah ritual cleansing principles.	(Othman et al., 2018) (Kwag & Ko, 2019)
Green Hull Removing	1. Dry-Dry hulling is suggested in order to maintain pistachio quality. 2. Avoiding re-use of water. 3. Waste management and use of pistachio green hull (PGH) as raw material in production of: - biofuel, - natural antioxidant and antimicrobial extract, - pectin, - heavy metal adsorbent biochar and so on.	(Sonmezdag et al., 2019) (FAO/IAEA, 2001) (Taghizadeh-Alisaraei et al., 2017) (Ahanchi et al., 2018; Sadeghinejad et al., 2019)
Sorting	1. Removing small, discolored, shriveled or damaged nuts to obtain uniform and superb quality pistachios. 2. Damaged pistachios could be used in biofuel production. 3. Automated and intelligent pistachio nut sorting systems are preferred in order to increase accuracy, lower the risk of cross contamination and costs.	(FAO/IAEA, 2001) (Taghizadeh-Alisaraei et al., 2017)
Dehydration	1. Analyzing system exergy to lessen dissipation. 2. Using sustainable resources of energy like solar drying systems with reduced time of dehydration. 3. Solar drying along with air recycling system could be a green choice for pistachio dehydration.	(Sheikhshoaei et al., 2019) (Ssemwanga et al., 2020) (Mokhtarian et al., 2017)
Roasting & Salting (seasoning)	1. Roasting in optimal condition for each variety to reach the optimum quality (antioxidant activity, color and sensory properties, aflatoxin degradation and …). 2. Analyzing the amounts of exergy utilized and destroyed during pistachio roasting process in order to manage energy resources. 3. Different forms of renewable energy are suggested to achieve sustainability.	(Martins et al., 2017; Sonmezdag et al., 2019) (Sheikhshoaei et al., 2019) (Sheikhshoaei et al., 2019)

Section	Critical Issues	References
	4. Besides halalness of ingredients, following the permitted level of addition to maintain Tayyib aspect of pistachio in term of safety and safe for consumption is important.	(Yahya et al., 2016)
	5. Reduction and replacement of sodium salt with beneficial and functional replacers are widely recommended.	(Taladrid et al., 2020)
Bulk Storage	1. Use of good sanitation following Shariah ritual cleansing principles, physical protection, heat treatments, packaging in insect-proof containers.	(Kwag & Ko, 2019)
	2. Chemical fumigation is not allowed. New physical methods (RF), and biological control could be considered as an alternative to chemical treatment during pistachio storage.	(Siahmoshteh et al., 2017)
Packaging & Labeling	1. Green packaging is a priority. Packaging materials must be biodegradable, ecofriendly and free from unlawful and harmful ingredients.	(Jafarzadeh et al., 2020; Latif et al., 2014)
	2. Modified Atmosphere Packaging, Air-tight packaging preferably vacuum or over nitrogen.	(FAO/IAEA, 2001)
	3. Providing more clear and informative labeling such as radio frequency identification (RFID) tags and other forms of the Internet of Things (IoT).	(M. H. Ali & Suleiman, 2018)
	4. Containing Tayyib brand or summarized and sufficient informative data.	

Table 4

Critical Factors in Tayyib Pistachio Distribution

Section	Critical Issues	References
Human Resources	As mentioned in Table 2.	
Financial issues	As mentioned in Table 2.	
Handling & Transportation	**1.** Separation of facilities and equipment from Haram items during transportation of Tayyib product.	(Kwag & Ko, 2019; Latif et al., 2014)
	2. Prevention final product from being exposed to haram product and hazardous product (filth/dirt/najis) during the transportation.	(Othman et al., 2018; Supian, 2018)
	3. Using refrigerated transport vehicles.	
	4. The vessel of transport needs to be ritually cleaned.	(Supian, 2018)
Storage	1. Prevention final product from being exposed to haram product and hazardous product during the storage.	(Supian, 2018)
	2. Avoiding storage pistachio with other commodities that have strong odors.	

Distribution	1. Cold storage at distribution centers is desirable to delay nut rancidification.	
Consumer Focus	1. Consumers' inquiries must be taken seriously.	(Ahmad et al., 2017)
	2. Providing clear information for customer at any stage of supply chain by various means (website, apps, RFID tags and …)	(M. H. Ali & Suleiman, 2018)

5. Discussion

The literature research and in-depth interviews provided insight from various aspects as to what are the critical factors for Tayyib pistachio production and implementation of HTRMP as a prerequisite for HTCCP. Different set of critical factors based on the defined Tayyib indices were found and listed in three important parts of pistachio supply chain (production, processing and distribution). Among them, critical factors which guarantee the fulfillment of the first index, Halalness are: separation of facilities and equipment from Haram items during transportation of Tayyib product (Kwag & Ko, 2019), prevention final product from being exposed to haram product (Supian, 2018), cleaning all the equipment following Shariah ritual cleansing principles (Kwag and Ko, 2019), supplying Halal financial resources (Antara et al., 2016), fair contracts (Min et al., 2019) and ban of consuming alcohol, cigarette, drugs (Antara et al., 2016). Some other factors like: personnel regular health checkup (Kwag & Ko, 2019) and getting ethic code besides following acceptable behavior (Othman et al., 2018), prohibition of child labor (potential effects on physical and mental health) (Ibrahim et al., 2018), avoiding irrigation with (Alzeer et al., 2020), avoiding use of any hazardous chemical as fertilizers, pesticides, fumigants and so on (Sabarwal et al., 2018; Siahmoshteh et al., 2017), refraining from applying human faeces and untreated animal faeces (Najis) as fertilizers (Alzeer et al., 2020), and using safe packaging material (Jafarzadeh et al., 2020) are the infrastructures for achieving the second Tayyib index-Healthiness and Safety. Originality index covers factors such as not using GMO (Alzeer et al., 2018), providing clear information for customer at any stage of supply chain by various means (website, apps, RFID tags and …), and employment of local workers. The last item could cause improvement by combination of indigenous knowledge is passed on from previous generation with modern technologies. Furthermore, due to the increasing local rate of employment, eagerness and desire to revive ancestral profession would be increased. From another aspect, since most of labors are women (68% of workers in 5 visited orchards and processing lines), reducing or eliminating commuting time by employing local workers can attenuate adverse effects of commuting on their well-being (Jacob et al., 2019). In order to accomplish Desirability and Attractiveness index, consumers must ensure that the food products are produced in the way that has considered all aspects of ethics and morals (human rights, animal welfare and environmental issues). It makes them feel more comfortable (Al-Ansi et al., 2019; Arsil et al., 2018). Insisting on factors like: assuring of employees satisfaction with their salaries and welfare amenities (Alzeer et al., 2020; Min et al., 2019), application of green packaging (Jafarzadeh et al., 2020) and considering financial resources (being free from usury, bribe and etc) (Yunus et al., 2010) will guarantee spiritual comfort and peace of minds. Consumption of food products containing the Tayyib brand could create sense of trustworthy that will provide positive effects on mood, attitude, health and faith practicing (Alzeer et al., 2018, 2020; Yahya et al., 2016). The final index, efficacy that means to create value in different aspects of life, avoid squander and improve productivity through making the process and products economic and environmental friendly and sustainable, could be achieved by utilizing pistachio waste streams for value creation (Hongthong et al., 2020), selecting the most resistant and efficient pistachio species after the climate, soil and water suitability analysis (Pourmohammadali et al., 2019), assessment the amounts of exergy utilized and destroyed during pistachio drying/roasting process and using different forms of renewable energy (Sheikhshoaei et al., 2019).

6. Conclusion

Tayyib as a new process and trend in food industry could ensure consumers that all superb quality standards and compliance with Sharia rituals (mostly ethical, economic and environmental) have accomplished by authorities in

all parts of food supply chains. In order to design a Tayyib process, we need detailed information of supply chain, as well as precise definition of Tayyib indices. Next step is to prepare a Halal and Tayyib risk management plan, based on defined and probable critical issues. As a case study, critical factors in Tayyib production of Pistachio investigated in this article throughout its supply chain (production in orchard, processing and distribution). By implementation of TRMP in pistachio supply chain we will get one step closer to define Halal and Tayyib CCPs and HTCCP enforcement.

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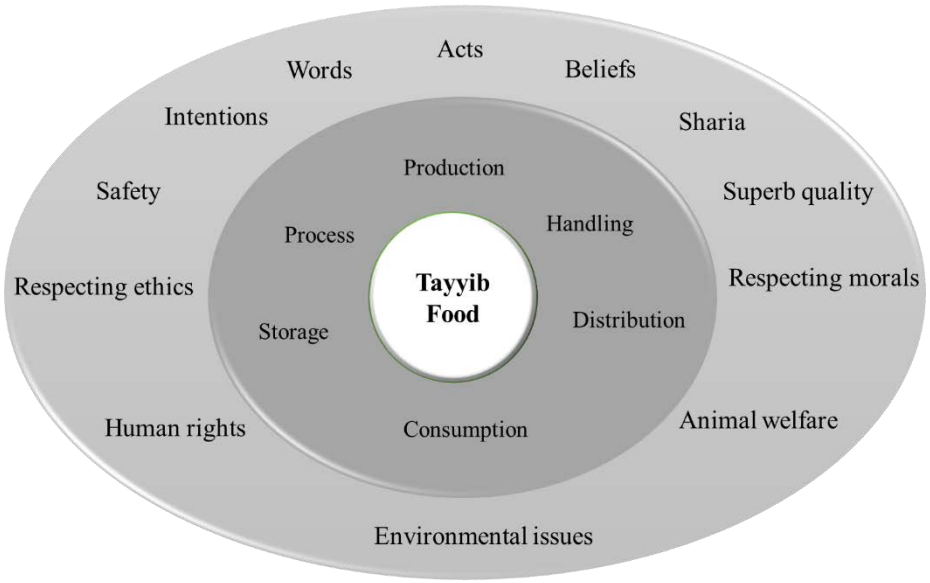

Figure 1. Various aspects and circumstances should be considered in Tayyib food production

Tayyib foods for children: Human milk and infant formula

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Abstract

Early feeding of the baby plays an important role in the physiological function, maturity of the immune system and cognitive development of the baby. Human milk, as an ideal food with the highest standards, is a food that has been approved by the World Health Organization for infant feeding. In general, breast milk is referred to as the divine food, halal and tayyib nutrition for the baby. Breast milk contains important nutritional metabolites, some of which are in very small amounts. These compounds include oligosaccharides, non-protein molecules containing nitrogen, and non-polar fats. In addition, the study of new scientific sources in the world indicates the presence of probiotic bacteria as immune cells with many roles in enhancing the immune system, fighting pathogenic bacteria and producing a variety of functional metabolites. Therefore, it is expected to accurately identify the components of breast milk that are used to feed the baby in accordance with Islamic rules achieved baby food formulas in accordance with the standards of halal foods and at a higher level, namely Tayyib foods.

Keywords: Breast milk, infant formula, oligosaccharides, probiotics

Investigation of effect of different processing methods on anti-nutritional compounds in food in order to achieve tayyib food indicators

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Abstract

In Islamic texts, especially the Qur'an, the consumption of halal and tayyib food is emphasized. One of the indicators of tayyib food is its health and high nutritional value. Therefore, one of the goals that should be considered in food production is to use methods that improve the health, quality and nutritional value of food. Cereals and legumes have a major role in the nutrition of the people of the world, especially in Asian countries. This review study was conducted to introduce the anti-nutritional compounds in cereals and legumes and their role on human health and to evaluate the effect of different processes on their reduction. The results of this study showed that these products in addition to nutrient compounds such as carbohydrates, proteins, fiber, minerals and vitamins have anti-nutritional compounds such as saponins, tannins, phytic acid and enzymatic inhibitors. The anti-nutritional mechanism of these compounds is usually related to the formation of complexes with nutrients and reduced nutrient bioavailability in the body. The use of various cooking processes (boiling, microwave, etc.), soaking, germination and fermentation is effective in reducing these anti-nutritional compounds**.**

Keywords: Anti-nutritional compounds, processing, legumes, cereals, tayyib food.

The effect of food security and safety in food health

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Abstract

One of the most important issues we face in this century is the problem of food safety and security. With the increase in population and the demand for food, the issue of human security has become one of the most important aspects, and not paying attention to this sensitive global problem means a lack of security for human societies. The importance of food for human beings is undeniable. Food is of particular importance for the well-being of every man, woman and child around the world. We are witnessing fundamental changes in the way we consume food. In modern countries, food is produced in special facilities and then transferred to markets that can be in the same country or even in remote areas. Delivery of food from the place of production to consumption in proper conditions requires a lot of energy. In a competitive global market, the cheapest way to preserve food is always in demand, and in most cases, food additives are preferred over others. When food is not safe enough, many food poisonings occur, which are caused by a variety of microorganisms. Food poisoning can be defined as a disease caused by the activity of microorganisms in food and food poisoning can be prevented by using safety and personal and health care measures, so individual efforts in the field of health, government laws and safety laws are recommended. Therefore, the present study has investigated the effective factors using documentary method and library study.

Keywords: food security, food poisoning, Hygiene, Packaging, Food

Quran, sciences and herbal products

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Abstract.

In the Holy Qur'an, God Almighty mentioned a total of 16 plants, including bananas, figs, olives, dates, grapes, cucumbers, etc. directly and indirectly, as well as examples of vegetables such as: cucumbers, garlic, lentils, onions , pumpkin, etc., he has mentioned. During the last few years, the demand for the use of medicinal plants and herbal products to prevent and treat various diseases has increased among a large percentage of the world's population. Medicinal plants and herbal products have been used since ancient times. It has been used as a valuable source of medicine in almost all cultures. This research has been developed with a descriptive-analytical method and with a Quranic and narrative approach to investigate the role of some plants mentioned in the Holy Quran from a narrative-Quranic and scientific point of view. And in the end, we have come to this conclusion, by examining and studying more deeply the issue of plants and plant products in the Quran and scientific study of plants from different aspects, we can find out other important issues. It should be noted that in this article only the investigation of different plants in the Holy Quran is considered and other sub-aspects of this issue are not mentioned and it is suggested that each of the above plants be more detailed from the perspective of the Holy Quran. be checked

Keywords: Holy Quran, herbal products, benefits

The benefits of figs in Quran and medical science

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Abstract

Fruits are one of the most important components of the human food chain due to their various valuable properties. The names of different fruits are mentioned in the Holy Quran, which shows their importance and value. One of these unique fruits is figs, which God has sworn on in the Holy Quran, and by doing so, he has introduced figs as a useful and valuable fruit. This study aims to investigate the chemical compounds in this fruit, its various functions in the body, and understand its medical and therapeutic potential. This study shows that figs have many advantages for the body and are useful and effective in the prevention and treatment of many diseases such as cancer, diabetes, osteoporosis, skin problems, etc. These findings indicate the importance of figs as a nutritious and healthy fruit.

Keywords: Tayyeb food, figs, Quranic fruits, healthy nutrition

Bread waste and practical solutions to reduce it

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Abstract:

Bread is considered as the main source of food for the people of the country, so it is very important to examine the challenges in the way of producing high quality bread. Unfortunately, when the bread is not of good quality, a large amount of daily bread is wasted and contaminated with all kinds of mold and fungus. These wastes may be created both in the production and consumption stages. The traditionality of the bread production method in the country and the inappropriateness of the baking technology, the low quality of the raw material (wheat and flour) and its fluctuations, storage pests, the low standard of bakeries, the quality of bread baking, and the quality of packaging are some of the factors that cause the increase The bread is thrown away. In order to reduce bread waste, practical solutions can be provided. For example, the industrialization of bread baking is one of the solutions. Industrial bread, from the beginning of the production line where the flour enters the system to the end where it is packed, is done almost without manual intervention, in this case proper fermentation is done on the dough and the nutritional value of the bread is also preserved. Improving the quality of bread by mixing the right amount of weak and strong wheat or even the flour itself with the right formula for preparing dough and bread has a great impact on the quality of bread. Also, increasing the skill and expertise of bakers with the type of work assigned to them is one of the effective factors in reducing bread waste.

Keywords: bread waste, challenges, quality

Investigating the principles of transportation and storage of wheat with the approach of reducing waste

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Abstract:

Unfortunately, during the wheat production process, wastes are also created, which are classified into four categories: transportation, storage, cleaning and conversion. The major part of the waste is related to the stages of harvest and after that (until the stage of consumption). The wheat harvested from the agricultural land is loaded and transported to the warehouses. Therefore, the lack of proper planning and management in these stages leads to an increase in wheat waste and also an increase in the cost of wheat transportation. In the transportation phase, the most important factors that increase wheat waste are worn out and non-standard vehicles. Therefore, allocating facilities for buying standard wheat trucks and cars, or using wheat rail transport instead of road transport, and also using car tents for wheat trucks can help to improve conditions and reduce waste. In the storage stage, the quantitative and qualitative damages of the stored grains, due to the attack of pests and growth and appearance of microorganisms, or due to the increase of humidity and heat in the warehouses and silos, cause important changes in the direction of reducing the nutritional and industrial value of these products. And its quality is reduced. Control of contamination by warehouse pests is one of the main parameters of maintaining quality in storage, and if pests are not controlled before entering the warehouse, it can lead to product damage and loss.

Keywords: wheat, waste, transportation, storage, bread

Mechanism of action of improvers in bread quality: positive and negative effects

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Abstract

Cereals are one of the first foods known to mankind, which since ancient times have always played a very important role in the economy and nutrition of the people of the world, especially in developing countries, and for this reason, the symbol of cereals, i.e. wheat and bread, is always among religions. And different cultures of the world have enjoyed sacredness and precious dignity. The agricultural sector provides the main and basic needs of societies and is the most important in economic development programs. This sector is responsible for the production and supply of food products needed by the growing population of countries and establishing food security as the most important goal. The economic importance of wheat and bread can be considered in the three areas of providing food security, creating economic development and independence of the country. Therefore, increasing the quality of bread in different ways can be the basis of economic growth for the country and providing nutrition to the people. Bread improver increases the quality of bread and increases the shelf life of bread. Improvers are compounds that improve the quality of the final product by creating flexibility and increasing dough tolerance in all stages of bread production, including mixing, fermentation and baking. The most important effects of improvers include helping the process Dough, such as enzyme products, such as flour made from malt or amylase made from fungal sources, helping to produce gas, such as yeast food, including ammonium chloride, helping to maintain gas, such as oxidizing compounds, including ascorbic acid. It helps to soften the bread like monostearate (GMS) and also helps to improve the color of the bread core, like soybean flour. It should be noted that each of the improvers must be used in the defined amount and their excessive use will have an inappropriate effect on the bread dough and the quality of the produced bread and its texture.

Keywords: bread, flour, enrichment, improvement, staleness

A comprehensive look at bread as a basic commodity in the world s food basket: production, consumption and costs

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Abstract:

Planting wheat is one of the most important sources of income for rural households and is an important component in the national economy. The share of wheat products alone accounts for 47% of the energy consumed in household food needs. Therefore, among food and grains, wheat is an unrivaled commodity. Bread is the most strategic product of Iran s society, which is in the food basket of households and can even be considered as a social or cultural issue. Bread is the most common food product on the world s table and is considered a symbol of blessing and has a special place and respect among food items. The results of the analysis show that bread is a basic product in the food basket of Iranian households and it is possible to increase the availability and demand for bread with higher nutritional value by increasing the variety of bread production. Therefore, it is necessary to analyze the desire of consumers to increase bread consumption by using targeted innovations at the international level. Innovations such as increasing consumer awareness of the benefits of a healthy lifestyle, developing gluten-free products in Europe, producing products without reducing nutritional value and without waste, producing whole grain products containing fiber, omega-3, and salt cholesterol. And low fat can make a great contribution to the production and development of the bread market.

Keywords: bread, cost, wheat, food basket, nutritional value

The effect of different packaging on the quality and safety of milk and dairy products

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Abstract:

The ever-increasing growth of the population demands the special attention of governments in providing and producing more of the required food, which is called food security today. In food safety, attention to health and prevention of food contamination is an issue that should be given special attention. Therefore, food packaging is the easiest way to protect food. Usually, packaging protects food from the influence of external factors and also preserves its internal properties. Due to the importance of packaging in reducing food spoilage and its effect on product sales, it is important to pay attention to its various aspects. It is essential. Various materials (metals, glass, envelopes, etc.) are used for packaging. Plastics are a wide range of materials that have been increasingly used for food packaging in recent years. One of the issues that should be considered in the use of packaging materials is the possibility of any reaction between the packaging material and its contents and the transfer of materials between them. The purpose of food packaging is to increase their storage time and generally protect them from the risk of internal and external spoilage factors. Also, the transportation of food should be done better and easier. Packaging is also very important from the point of view of making the package attractive and market-friendly, and this aspect in some cases covers the rest of its application purposes. In addition to the above, an effective packaging material must have countless other requirements such as recycling, low price, availability, non-toxicity and malleability. All these requirements that are needed in all foods, especially for milk, which is a mixture of water, fat, proteins, carbohydrates and minerals. Due to its special compounds, it is a highly perishable product with high waste potential, which leads to a rapid decrease in its quality and safety. The reduction of quality may be caused by oxygen and light, respectively, leading to spontaneous oxidation and photooxidation, and the activity of bacteria, which leads to the creation of unpleasant flavors in the products. Humans need to consume food throughout the year in order to meet their nutritional needs and continue their lives, so food packaging is of particular importance.

Keywords: Milk, dairy products, packaging, quality, maintenance

Investigating the effective factors in the value chain of the Iran's poultry industry with export development approach

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Abstract

Given the importance of the value chain issue, the purpose of this study was to determine the key performance indicators of value chain and evaluate them in order to provide a model for the development of poultry exports. In this study, first reviewing previous studies and, key indicators of service quality in the value chain of the poultry industry were identified. Using literature review and with the approval of experts, 44 indicators were selected and then added Field data collection was collected from 120 poultry industry experts in Fars province using a questionnaire with 5-choice questions in the Likert spectrum. To determine the structure of variables, using heuristic factor analysis, the structure of research variables was determined and the structure of indicators was in the form of 10 factors. The results of this study showed that the most important key indicators in the value chain of the poultry industry are "quality of raw materials and certification for the main supplier of raw materials" and the least important indicator is "activities related to the employment of human resources". Therefore, the attention of the stakeholders of the country's poultry industry chain to raw materials and its main suppliers will play an important role in improving the quality of products and related services in order to promote the export of poultry industry products and consumer satisfaction.

Keywords: Value chain, Iran's poultry industry, Export development, Exploratory factor analysis.

The Effect of Nutrition Education on the Control of type 2 Diabetes

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Abstract

Instroduction: Diabetes is one of common disease . this disease causes many disorders in the life of diabetics. The present review study was conducted with the aim of the effect of nutrition on type 2 diabetes in 2022.
Material and methods: The present study is a review that was conducted using the search and review of existing cases. Searching for articles on the subject in international Databases , google scholar, PUB MED, Web of science and Iranian databases SLD, ELMNT, in the years 1997 to 2017 in Persian and English and focus on effect of nutrition on type 2 diabetes as the main field.
Results: in reviewing the results of the tects,27 articles and instructions were in line with the present research objectives.
Conclusion: the results of studies showed that diet modification and nutrition education have a great impact on disease control and reduce patient treatment costs.

Creating culture of tayyeb food consumption

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Abstract:

Food and food products are one of the most important issues that have been considered by people at all times and throughout history, extensive studies and activities have been done to improve its quantity and quality. There are many verses in the Quran about food and the characteristics of good food that show its importance in the growth and development of human beings. The purpose of this study is to address one of the aspects of nutrition that is less considered and that is the quality of food. In this regard, the concept of Tayyib and the semantic difference between halal food and its Tayyib and the culture of Tayyib food have also been studied. This research is a review article based on library study and review of texts. Findings and Conclusion: In the Holy Quran, the word Tayyib has been used for several topics, one of the most important of which is the field of food, nutrition and food products. Every food is not good from the point of view of the Qur an, but it is called good food, which in addition to being halal, must be healthy and non-harmful, good and clean, in accordance with nature, hearty and pleasant. It is clear from this that despite the accompaniment of halal and Tayyib in some verses of the Qur an, the word Tayyib has a very broad meaning. And in order to raise the level of awareness and create culture among the people, comprehensive attention should be paid.

Keywords: Quran, food, culture, tayyeb food.

Artificial intelligence in Supply Chain Management

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Abstract

Recently, the network of halal supply participants is expanding worldwide. The purpose of this paper is to create a framework for the implementation of Halal supply chain management systems, which requires Halal policy and specific design parameters for supply chain objectives, logistics control, supply chain network structure, supply chain business processes, supply chain resources, and supply chain performance. The halal supply chain model can be an important tool for designing and managing the halal food supply chain in expanding halal integration from the source to the consumer's point of purchase. Dynamic supply chain processes require technology that can cope with their increasing complexity. This paper introduces a solution in supply chain management (SCM) that connects suppliers, manufacturers, customers and other companies in a transactional relationship to enable efficient inventory management and just-in-time product delivery, which ultimately benefits the company. maximizes The proposed solution leverages Fourth Industrial Revolution technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), which provide solutions to complex management issues posed by the broader market. It can help stakeholders involved in promoting halal practices in the supply chain environment with the aim of maximizing company profits through efficient inventory management and timely supply of products and solving complex management problems arising from operating in a wide range of markets.

Keywords: Supply chain management, artificial intelligence, Internet of Things, ERP

Simulation approach for optimal design of cold chain management systems based on RFID technology

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Abstract

In this research, we proposed a systematic approach for managing product information along the cold chain based on RFID technology. First of all, we defined a model to collect and store basic data and parameters. In the next step, based on a case study, we simulated cold chain information management from the time of production until it reaches the customer with the proposed simulation software. The obtained results have shown that the presented model has the ability to detect unusual events and correctly shows the occurrence of problems during the cold chain.

Keywords: cold chain management, SCCS, RFID.

The effect of good food on maternal and child health during pregnancy and lactation (a systematic review article)

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Abstract

Paying attention to the role of good food during pregnancy and lactation on the mental and physical health of women, requires the identification of strong, reliable studies in accordance with valid criteria and Islamic protocols. This systematic review study was conducted to investigate the effect of good food during pregnancy and lactation, and by searching valid national and international databases. To access the latest related articles from 2012 to 2022 (1390-1401 solar) were reviewed. The good food that the mother consumes during pregnancy and lactation, has an effect on the body and soul of the mother and the development of fetal organs and the future behavior of the child. And it brings good results. Paying attention to women's nutritional beliefs derived from their religious culture, as well as creating a suitable educational environment for parents and creating appropriate websites, and awareness of health staff and relevant authorities to provide effective interventions in this area, play an important role in mental health and It has the body of mothers and children and seems necessary. In this area, interventions and studies have been done in a scattered and limited manner, which requires more interventional and review studies.

Keywords: good food, halal, pregnancy, lactation

The position and role of nutrition on moral management with the approach of explaining anger control

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Abstract

The relationship between human temperament and nutrition is undeniable. Conscientious, empirical and religious (revelation) reasons can be listed for this claim. Today, empirical knowledge has also proven the dependence between nutrition and moral traits that the imbalance in the type and amount of nutrition and the necessary compounds and the type of temperament and its suitability with his nutrition causes defects or changes in a person's mood. The purpose of the present research is to investigate the role of nutrition on morality with the approach of explaining the power of anger and anger control. Data collection has been done by referring to interpretive and hadith sources. In order to analyze the data and answer the research questions, documentary and conceptual analytical methods were used. The findings showed that carefulness in choosing a healthy nutritional pattern based on revelation teachings has a positive effect on moral indicators, including avoiding unbalanced behaviors and controlling anger. In addition, the recommendations of verses and narrations to use special types of food and proper eating methods in order to improve the underlying behaviors of the Ghobbiyyah's departure from moderation and methods of anger control based on the use of correct food programs from the results of this research are.

Key words: ethics, medicine, nutrition, temperament, moral vices, ange

Redesigning the new poultry system with the approach of achieving Tayyib food (Based on a lived experience)

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Abstract

The importance and impact of food on various physical and mental dimensions of man can not be denied. Therefore, in today's world, in addition to food security, we can see issues such as food security, which in addition to paying attention to the volume of food is also focused on its quality. The introduction of the concept of Tayyib on a level beyond the Halal, which has its origins in religion, shows the importance of this in the divine teachings. Today, chicken is one of the most consumed goods in the life of Iranians, but of course the method of production, consumption and other related issues have always been a place of challenge and study.

In this research, which has been done with an analytical-descriptive approach and using the implications of a lived experience in poultry production, in addition to analyzing the various dimensions of this matter, practical points for redesigning the new poultry system with the approach of obtaining good food have been presented. The teachings of this research can be used at different levels of breed, nutrition, breeding environment and chicken slaughter.

Keywords: Broiler chicken , Tayyib chicken , Tayyib food , Islamic nutrition , Halal food

Tayyeb food production using high hydrostatic pressure technology

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Abstract

Today, quality control is not specific to the final product, but continuous control and monitoring should be done from the beginning of production step by step. Having the right raw material, the right technology for processing and packaging, and how to store them all affect the quality of the product, and therefore the entire chain should be monitored and controlled. Tayyeb brings a deep concept of quality and health, authenticity and beauty to the production of food products. Therefore, non-destructive processes should be used to produce food according to good standards, and one of these non-destructive technologies is hydrostatic high pressure (HHP) technology. Nowadays, high pressure processes are used to prevent problems caused by thermal processes. By using high pressure processes while performing pasteurization or modifying the structure of the food, vitamins, taste, color and freshness of the food are preserved and no damage is done to its tissues. In addition, the process is done in a very short period of time and energy consumption is greatly reduced. All these cases have caused this technology to be known as a green and environmentally friendly technology, and considering that it prevents damage to food during the production process and preserves its quality, it is completely in line with the production standards Tayyeb food.

Keywords: Tayyeb food, High pressure technology, food quality

Safety assessment and identification of Salmonella in food: comparison of conventional methods and nanoaptosensors

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Abstract

Salmonella spp. is one of the four key foodborne pathogens. Salmonellosis is a global health problem through the consumption of varied food from dairy foods to juice. Then, rapid detection of this pathogen before the food reaches the consumer is very important to prevent food outbreaks, consumer safety, and reduce the resulting financial burden. Distinguish and quantification of Salmonella species in food samples are routinely performed using conventional culture-based techniques, which are that require a high workload, trained personnel, and ultimately are unsuitable for on-site testing. Furthermore, to overcome these drawbacks, different alternative methods like biosensors have been presented, particularly aptasensors with their high specificity and sensitivity, convenience, and relatively fast response. This study aims to review the advances and strategies that were made in the development of biosensors for the detection and quantification of Salmonella in these last years.

Keywords: Salmonella, Food safety, Common methods, Biosensors.

Saffron wastes, the gold that is thrown away

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Abstract

Saffron (*Crocus sativus* L.) is one of the most expensive plant species in the world. Iran has a main role in producing a significant amount of saffron in the world, which annually produces more than 400 tons. Most of saffron production in Iran is cultivating under traditional agricultural systems and forms an important part of the livelihood for family farms. Application of saffron in these systems has been limited to the food industry, textile and pharmacological purposes. The saffron flower after removing the stigmas is usually considered as waste, whereas variable components can be extracted from saffron wastes. In the present study, we focused on the potential of producing byproducts from saffron wastes. The results indicated that there is a high potential in using of saffron waste in cosmetic, fragrance and flavoring markets, food and feed additive and supplementary medicines. As saffron petals are cheaper and produce in large amounts compared to saffron stigma, they can be considered as an appropriate source for different purposes. Some part of the produced wastes is due to the lack of high technologies in traditional saffron production systems and the other part is based on the lack of knowledge and the related technologies in waste management which with introducing novel technologies, significant economic benefits can be expected.

Key words: by-product, *Crocus sativus*, feed additive, waste management

1 . Introduction

Saffron farmers have managed their traditional agroecosystems for centuries based on sustainability of yield with reliance on locally available resources (Koocheki, 1994). Traditional knowledge of the farmers is important in saffron production and processing, and there are diverse types of practices that should be recognized, documented and if necessary modified based on new technologies. However, the importance of economic, social and cultural values of saffron production as a family farming crop in the area should not be neglected (Koocheki, 2004). Interest in this crop is rising around the world and it is now being cultivated all around the world from China to Spain and even in the United States, Australia and New Zealand since around beginning of twenty first century. Saffron, due to its unique biological, physiological and agronomic traits, is able to exploit marginal land and to be included in low-input cropping systems, representing an alternative viable crop for sustainable agriculture (Gresta et al., 2008a). In spite of this great potential and the considerable increase in new generation consumer demand for saffron, the future of the plant is still uncertain (Gresta et al., 2008a). Iran is well known as the world's largest producer and exporter of saffron, which produced more than 90% (about 404 tons) of the world's total annual saffron production from 111,000 hectares mostly located in Khorasan Razavi province in 2018. However, the declining trend of the saffron yield since 2000 in the area confirms the necessity of innovations in the production of the crop. Moreover, new initiatives try to strengthen saffron cultivation in non-traditional countries such as New Zealand, USA, Argentina and Chile (Fernandez, 2004). According to Lahmass et al. (2017), harvesting one kg of stigmas would be accompanied by the following wastes: about 100 kg of spaths, 1500 kg of leaves, 350 kg of tepals, and hundreds kg of corms.

2 . Research history

The cultivation area of saffron in Iran have had a rising trend in the last few years and nowadays it is cultivated in 21 provinces (Koocheki et al., 2017). Saffron cultivation forms an important part of the livelihood for family farms. But despite increasing the saffron cultivation area, its average yield per unit of area has had a decreasing trend.

Yield of saffron depends on many agronomic, biological and environmental factors and is quite difficult to forecast. Production is influenced by parameters like the storage conditions of corms (Molina et al., 2004c), climatic conditions (Sanaeinejad et al., 2008; Tammaro, 1999, 1990), sowing time (Gresta et al., 2008b), cultural

techniques (annual or perennial), crop management (irrigation, fertilization and weed control) and pests or disease control. Generally, one hectare of saffron may produce 10–15 kg of dried stigmas, but it can range widely from 2–30 kg based on the production conditions (Gresta et al., 2008a).

There is also a variable range of saffron yield around the world. For instance, the reported yields have ranged from 2.5 kg ha^{-1} in Kashmir, India, and Morocco (Bali and Sagwal, 1987) to 29 kg ha^{-1} in Navelli (Tammaro, 1999). The latter achieved under irrigated conditions and with using big corms in an annual cropping system.

Saffron petals are considered as agricultural wastes. Processing and using them can be a new opportunity in the saffron industry with regard to the huge amount of the petals that are thrown away yearly. For example, around 36 kg of dried petals is produced in each hectare of saffron farm. Considering of 11,000 hectare of saffron farm, 3960 tons of dried petals is produced annually in Iran alone (Khajeh-Hosseini and Fallahpour, 2020).

Most of saffron producing regions encounter water deficit conditions; Bazrafshan et al. (2019) estimated the virtual water trade and water footprint of saffron production in different saffron cultivated area of Iran. They reported that the average water footprint of saffron production in Iran was 4659 m^3 kg^{-1}.

The total water footprint of saffron production in Iran was around 1541 Million Cubic Meters (MCM) yr^{-1} and the share of exported virtual water was 1354.6 MCM yr^{-1} while the average economic water footprint of saffron production was 3.1 m^3 per US $. Although saffron is one of crops that uses limited water, innovation is needed to reduce the wastes particularly in arid and semi-arid areas that face serious water crises.

Nowadays, saffron cultivation is a profitable job for about 400,000 people in the region. To ensure the future of the saffron crop it is necessary to preserve traditional sustainable methods to improve cultivation techniques, plant materials, quality evaluation methods, and to develop a wide range of saffron uses, particularly those related to human nutrition and health. The worldwide increase in the utilization of saffron as a natural product requires new biological and economic development, and co-operative programs on technological and medical studies. To fulfill these, however, production systems need to be modernized and high-quality propagation material must be provided to the farmers. Technology related to cultivation, post-harvest processing, quality control, and product development must also be modernized. To stabilize the production of saffron, new methods and techniques in worldwide marketing need to be developed urgently (Fernandez, 2004). Application of saffron over the years has been limited to the food industry, textile and pharmacological purposes. After removing the stigmas, the saffron flower is usually considered as waste. Studies indicated the potential of saffron waste for use in cosmetic, fragrance and flavoring markets. As saffron petal is cheaper and produced in large amounts compared to saffron stigma, it can be considered as an appropriate source for different purposes .

Saffron by-products

Natural flavor

Argento et al. (2010) investigated the composition of the hydro-alcoholic extract of saffron dried flowers. They identified a significant overlapping in saffron flowers GC profile with commercial cocoa powder aroma. In addition, they found 17 different flavonoids, which are well known as antioxidants. Previously, Bergoin et al. (2004) showed a contribution of the honey note in fresh saffron flowers and suggested its potential to use in flavor and fragrance industry. Honey-like flavor and aroma of saffron also reported by Lech et al. (2009).

Supplementary medicine

On the other hand, saffron petals can be used as an alternative or supplementary medicine in some diseases. Hosseini et al. (2018) reported different pharmacological properties of saffron petal such as antibacterial, antispasmodic, immunomodulatory, antitussive, antidepressant, antinociceptive, hepatoprotective, renoprotective, antihypertensive, antidiabetic and antioxidant in a review paper; most of them are related to the presence of active components in saffron petal that mostly exhibit anti-oxidant activities. Moreover, Lahmass et al. (2018) indicated the antioxidant properties of ethanolic extracts of six different by-products of saffron including dry leaves, green leaves, corms, tunics, spaths (part between corm and shoot) and stigmas and suggested that all by-products produced from the harvesting of saffron stigma could be applied as a natural antioxidant source for biological

activities. Their results showed the highest level of free radical-scavenging activity in corms extract and the strangest protection from β-carotene bleaching in spaths extract. Righi et al. (2015) also declared the utilization of saffron petals for phytopharmaceutical and nutraceutical purposes.

Natural color

In another study, Mortazavi et al. (2012) investigated the use of saffron petals in coloring of wool fibers. They found that varied hues from light yellow to light brown were obtained from saffron petals based on the kind of mordants applied and suggested that saffron petal can be a good natural colorant for wool dyeing.

Edible extract of saffron petals, particularly anthocyanin, has also attracted the business sector with promising outcomes in Khorasan Razavi province, Iran. Natural edible colorant not only is environmental-friendly, but is also believed to have anticancer and antiviral effects as well as other health benefits (Khajeh-Hosseini and Fallahpour, 2020).

Green adsorbent

For example, to enhance the profitability and sustainability of crop waste, a facile green method was introduced to synthesize zinc oxide nanoparticles (ZnO NPs) by means of saffron leaf extract as a stabilizing agent (Rahaiee et al., 2020). The ZnO NPs were studied for their photocatalytic activity over the deterioration of methylene blue (MB) dye in aqueous solutions. The maximum removal of MB gained was 64% with an initial ZnO NP concentration of 12 mg/mL under ultra-violate emission. The current research showed that the saffron leaf can be consider as an ease and eco-friendly option to sustainably synthesize ZnO NPs for use as a photocatalyst.

Feed additive

Traditionally, farmers use saffron wastes after harvesting for livestock nutrition and there are also several studies on its potential usage as an animal diet and a feed additive in the poultry and livestock industry to promote performance and health. For instance, in the poultry industry, the shell eggs naturally are stable against oxidation and can easily be stored under refrigerated conditions, however, processed eggs like the dietary modified eggs that contain higher levels of ω-3 fatty acids can be readily oxidized during the refrigerated storage (Botsoglou et al. 1998). The use of synthetic antioxidants for increasing the oxidative stability of foods is currently approved, but there is a high demand for natural antioxidants that could replace the synthetic ones and satisfy consumer demands for production of eggs and meat without residues from substances that have the potential to harm human health (Botsoglou et al., 2010). In the last few years, several studies have suggested dietary supplementations like saffron as an effective means for improving the oxidative stability of eggs and meat (Martinez-Tomé et al. 2001). With natural agents, such as saffron, the hope is that their availability, lack of obvious toxicity at effective dose and ability to protect health by various mechanisms, would allow their introduction as potential feed additives. With regard to the high cost of saffron, its by-products that have the same composition as the rest of the spice can be used as a low cost sustainable feed additive for its antioxidant and coloring properties, as well as the health promoting ones (Botsoglou et al., 2007).

The major challenges are the standardization of the biological multi-component composition derived from saffron and the standardization of their effects on animal performance and food quality and safety (Khajeh-Hosseini and Fallahpour, 2020).

3 . Conclusion

Saffron has been produced in the past, and even at the present, mostly based on family farming systems in particular areas of the world. Nowadays, the areas of production and its trade is expanding to many countries, hence innovation of its production, processing and uses are needed.

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Comparison of the Nutritional Pattern of Patients with and without Nonalcoholic Fatty Liver in Tehran

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Abstract

Background: High prevalence of non-alcoholic fatty liver disease is associated with obesity and lifestyle disorders. The present study was conducted to compare the nutritional pattern of patients with and without non-alcoholic fatty liver disease referred to hospitals affiliated to Tehran University of Medical Sciences in 2017.

Method and materials: This study case-control performed on 300 outpatients and inpatients patients having 18-65 years referred to the ultrasonography section of hospitals and the method of sampling was convenience. According to the results of ultrasonography, these subjects were divided into two groups: case (100 patients) and control group (200 subjects). The data were analyzed using SPSS version 19, descriptive statistics and Mann-Whitney test.

Findings: There was a significant difference between the mean consumption of unhealthy foods in the case group compared to the control group (P=0.001), while those with fatty liver reported a lower average intake of fruit and vegetable in their food basket, which showed a significant difference (P=0.001).

Conclusion: The results showed that people with fatty liver complied with poor dietary habits compared to patients with non-alcoholic fatty liver. Regarding the prevalence of non-alcoholic fatty liver, lifestyle changes and the implementation of educational interventions to increase awareness and improve the attitude of individuals and conduct appropriate further studies to prevent and treat the fatty liver are necessary.

Keywords: Non-alcoholic fatty liver, Nutrition, Pattern

Introduction

Non-alcoholic fatty liver disease (NAFLD) is one of the most common forms of chronic liver disease in the world, and it is considered as a main causes of visits in hepatitis clinic among adults (1). Simple liver steatosis is seen in this disease and can be developed to non-alcoholic steatohepatitis, fibrosis, cirrhosis, failure, and finally liver cancer (2). NAFLD is accompanied with a range of clinical and preclinical changes that are diagnosed with macroscopic steatosis without alcohol consumption and include a range of simple steatosis such as non-alcoholic steatohepatitis, fibrosis, cirrhosis and ultimately hepatocellular cancers (3).

The prevalence of non-alcoholic fatty liver disease is reported 2 to 3 times higher than the hepatitis B, C and alcohol-related liver disease, and is the main responsible of liver test disorder (4). The prevalence of NAFLD changes from 12% to 24% regarding age, gender, place of residence and race in Asia countries. Research in eastern countries have shown that NAFLD is increasing due to bad lifestyle (high-fat diet, low physical activity, obesity and type II diabetes), in a such way that only the prevalence of liver steatosis is estimated approximately 16% to 30% in the public people (5).

Non-alcoholic fatty liver disease is a multidimensional disease that is associated with a range of factors including genetics and lifestyle such as type of nutrition and physical activity (6). Increasing immobilization behaviors is one of the growing health problems in different societies which secretly increases the risk of chronic diseases such as non-alcoholic fatty liver in humans (7), high prevalence of non-alcoholic fatty liver disease is associated with obesity and lifestyle disorders (8). Increased immobilization hours can have a potential role in developing fatty liver disease (7).

For this reason, treatment of this disease is mainly focused on behavioral and lifestyle interventions including diet, increased physical activity and weight loss. However, according to recent studies in Iran, the rate of physical activity has been decreasing over the last decade (9), and the rate of obesity and overweight among Iranian men and women is considerable (10). Therefore, it seems that in the near future, the prevalence of fatty liver disease in our society will increase. Considering the low level of physical activity and consequently obesity, it is one of the factors affecting the non-alcoholic fatty liver disease, and these two factors are the main risk factors (7).

In terms of treating fatty liver disease, it is highly responsive to behavioral changes, so that in most people with fatty liver, the only way to treat is to increase physical activity, reduce energy intake, especially fatty foods and remove certain harmful food. Almost all strategies have been designed to reduce weight and eliminate obesity (11). So far, there have been relatively few studies on the diet of patients with non-alcoholic fatty liver and their comparison with the diet of healthy people. Although the results of these studies have differences in some cases, overall, based on the results of these studies, it can be said that patients with non-alcoholic fatty liver in their diet have lower amounts of cereals (12, 13) and dairy products are low compared to healthy people (14). Also, according to these studies, people with fatty liver have more red meat compared to healthy people. Daily intake of fruits and vegetables has also been reported in these patients less than healthy people (12, 15).

Therefore, with unhealthy diets and increasing use of fast foods, Iranian society is pushing for a massive increase in weight and incidence of obesity, and if it continues, it is very fearful and

Method and materials

This case-control study was conducted on patients with and without non-alcoholic fatty liver disease referred to hospitals affiliated to Tehran University of Medical Sciences. The case group was selected from outpatients and inpatients patients aged between 18 to 65 years old referred to the ultrasound section of selected hospitals, who had positive fatty liver disease. Control subjects were also selected from those who had a negative NAFLD. The inclusion criteria were willingness to participate in the study, outpatients and inpatients patients aged between 18 to 65, lack of experience with alcohol, lack of hepatitis B, C, liver cancer, Cushing's syndrome, chronic pancreatitis, Wilson's disease and thyroid disease. In this research, convenience sampling method was used. In this way, the samples were selected from people who were accessible to the scientist and divided into two groups of case and control. A group matching was used to select the control group. The control group were matched in terms of age, sex distribution, distribution of education, occupation, marital status, place of residence, tobacco use and health insurance.

The minimum sample size was calculated 84. Considering the possible attrition, 100 cases and 200 controls were selected. After the received code of the ethic committee (IR.SBMU.RETECH.REC.1395.130), the highest number of samples were selected from Imam Hossein hospital (82 subjects), and then from Taleghani hospital (70 subjects), Shohada hospital, Tajrish hospital (65 subjects), Imam Khomeini hospital (42 subjects) and Shariati hospital (41 subjects), respectively.

The data collection was carried out through a demographic data collection form was presented as a self-administrated form, which includes the individual characteristics of the units studied including age, sex, height, nutrition over the past year, occupational status, marital status, duration of non-alcoholic fatty liver disease and medication use.

Statistical analysis

The data were analyzed using SPSS 21 software, descriptive (mean, standard deviations and frequency) as well as Man-Whitney test to compare the mean.

Results

This study was conducted with the participation of 300 patients aged between 18 and 65 where 204 subjects were males (82 patients with fatty liver and 122 without fatty liver) and 94 subjects were females (18 with fatty liver and 78 without fatty liver). The mean age of subjects with fatty liver was 46.33±5.39 and average age of subjects without fatty liver was 47.20±7.96. Most of research participants were married (84%), job without physical activity (69%) and no medication (84.5%).

Table 1. Descriptive characteristics of gender, marital status, medication, job, age, waist circumference, and BMI and comparing them in research groups**.**

Variable	Level	Healthy, N (%)	Fatty liver, N (%)	P
Gender	Male	122 (61%)	82 (82%)	0.001

	Female	78 (39%)	18 (18%)	
Marital status	Single	34 (17%)	5 (5%)	0.001
	Married	138 (69%)	84 (84%)	
	Divorced	20 (10%)	6 (6%)	
	Died	8 (4%)	5 (5%)	
Medication use	Yes	31 (15.5%)	73 (73%)	0.001
	No	169 (84.5%)	27 (27%)	
Job	With physical activity	127 (63.5%)	31 (31%)	0.001
	Without physical activity	73 (36.5%)	69 (69%)	

Table 2. Comparison of food intake during the last year in patients with and without non-alcoholic liver disease in the case and control groups

Variable	Group	Mean ± SD	P value
Red meat	Healthy	66.78±0.1	0.001
	Fatty liver	76.59±0.2	
Fish	Healthy	67.39±0.2	0.001
	Fatty liver	10.44±1.1	
Poultry	Healthy	73.67±0.2	0.001
	Fatty liver	29.70±0.1	
Egg	Healthy	98.32±0.1	0.001
	Fatty liver	44.08±2.1	
Low-fat dairy	Healthy	82.19±3.1	0.001
	Fatty liver	33.07±3.2	
High-fat dairy	Healthy	20.82±0.1	0.001
	Fatty liver	64.14±1.2	
Unhealthy oil	Healthy	14.41±1.1	0.15
	Fatty liver	33.94±0.2	
Healthy oil	Healthy	36.36±3.1	0.06
	Fatty liver	43.4±3.2	
Industrial juice	Healthy	90.88±0.0	0.16
	Fatty liver	94.04±0.1	
Cereals	Healthy	14.21±2.1	0.02
	Fatty liver	80.17±2.1	
potato	Healthy	82.97±1.1	0.001
	Fatty liver	92.07±2.1	
Fried potato	Healthy	43.61±0.0	0.001
	Fatty liver	90.30±2.1	
Tea	Healthy	20.09±4.3	0.25
	Fatty liver	43.10±4.1	
Whole grains	Healthy	86.00±4.3	0.001
	Fatty liver	53.00±3.1	
Refined grains	Healthy	88.45±0.1	0.001
	Fatty liver	25.36±2.1	
Snack	Healthy	75.01±0.1	0.001
	Fatty liver	79.92±0.1	
Nuts	Healthy	33.89±2.1	0.001
	Fatty liver	24.12±2.1	
Dried fruit	Healthy	21.39±2.1	0.001
	Fatty liver	15.77±2.1	
Pickles	Healthy	16.98±1.1	0.14
	Fatty liver	17.22±2.1	
Coffee	Healthy	79.45±0.1	0.001
	Fatty liver	40.12±2.2	
Salt	Healthy	36.87±1.1	0.001

Variable	Group	Mean ± SD	P value
	Fatty liver	49.05±3.1	
Viscose	Healthy	70.70±0.0	0.001
	Fatty liver	26.34±2.1	
Natural juice	Healthy	48.27±4.1	0.001
	Fatty liver	22.32±2.1	
Sweets and cola	Healthy	86.86±0.0	0.001
	Fatty liver	95.39±0.2	
Fruit and vegetable	Healthy	45.284.1	0.001
	Fatty liver	41.09±3.1	

The results of the above table, based on the Mann-Whitney test, showed that the non-affected group had been had fish, poultry, low-fat dairy products, cereals, whole grains, nuts, natural fruit juice, and more fruits and vegetables over the past year compared to in the group of patients with fatty liver, in other hand the non-affected group had been had low red meat, eggs, high-fat dairy products, industrial juices, fried potatoes, chips, refined grains, snacks, garlic, coffee, salt, processed meats, sweets, and soft drinks compared with the group of patients with fatty liver, these differences in nutrition between these two groups was statistically significant ($P<0.05$).

Discussion

According to the results of the study analyzed on 300 patients aged between 18 to 65 years old, which 204 were male (82 subjects had had fatty liver and 122 subjects had not fatty liver) and 94 subjects were women (18 subjects had fatty liver and 78 subjects had not fatty liver). The mean age of subjects with fatty liver was 46.33 ± 4.39 years and the mean age of other group was 47.20 ± 7.96 years. The mean BMI in the fatty liver group was 26.10 ± 1.22 and 22.47 ± 1.97, respectively, and the mean waist circumference of fatty liver group was 98.83 ± 7.28 and in the other group was 84.83 ± 8.68. Most of research participants were married (84%), job without physical activity (69%) and no medication (84.5%).

In the context of dietary habits, patients without fatty acids compared to patients with fatty liver have been dad less red meat, eggs, high-fat dairy products, industrial juices, potatoes, fried potatoes, refined grains, snacks, coffee, salt, processed meat, dried fruits and cola. However, the consumption of fish, poultry, low-fat dairy products, cereals, whole grains, nuts, natural fruit juices, fruits and vegetables was lower in patients with non-alcoholic fatty liver.

In the study of Moradi Kanaki et al, which compared risk factors for the developing fatty liver, the mean consumption of red meat and high-fat dairy products was lower daily and weekly in patients with non-alcoholic liver disease (16), and healthy people had more fruits and vegetables compared to the patients with fatty liver. Also, in the research of Pakzad et al., consumption of fruits, vegetables and fish was higher in healthy individuals than red meat (17). The results of the study conducted by Thoma et al., indicated that healthy people were more likely to use white meat and healthy drinks compared to non-alcoholic fatty liver patients, and consumed less red meat per week (18).

Shi et al. reviewed the prevalence of non-alcoholic fatty liver disease and its association with lifestyle habits among university students and staff. They concluded in their study that consumption of rice, fruits, vegetables, red meat, eggs, fish and fatty milk, cereals and sweets was high in people with non-alcoholic fatty liver (19). Also, in a study by Georgoulis et al. on the effect of grains and non-alcoholic liver disease, it was found that people with non-alcoholic fatty liver consumed high amounts of grains during the day and week (20). Also, their fat intake during the week was high. Dehghan et al. conducted a research on comparing nutritional behaviors and body mass index in patients with non-alcoholic fatty liver compared to patients without non-alcoholic fatty liver. In their research, it was found that the consumption of high-fat dairy products was significantly higher in non-alcoholic fatty liver (21).

In the study of Carvalhana et al. they found that nutritional value of fat, cholesterol, saturated fat and high sugar content were one of the main causes of fatty liver. In this study, patients with fatty liver use a high-fat and high-fat diet in comparison to healthy people. The results of this study confirmed the nutritional findings of the present study (22). In the study by Guo et al., which examined the lifestyle, nutritional habits, and factors affecting overweight and obesity of students, the results showed that people who have excessive obesity eat less breakfast than normal people and they had fruits less than 4 times during the week. On the other hand, consuming of high-fat foods and fast food during the week was more than 4 times during the week (23). In various studies the consumption of red meat and its products, fats, oils, sugars and sweets in patients with non-alcoholic fatty liver

compared to healthy group was high than recommended values and the consumption of whole grains, fruits and vegetables in these patients were low (19, 24, 25).

The protective effects of the consumption of fruits and vegetables on the prevention and development of fatty liver due to high fiber content, phytochemicals and antioxidant compounds is approved because phytochemicals and antioxidants are anti-inflammatory and prevent the progression of hepatic steatosis as well as fiber also plays a role in maintaining blood glucose, insulin, and free fatty acids in patients with non-alcoholic fatty liver (26).

Conclusion

Non-affected people had mostly low-fat and low-cholesterol diets, while people with fatty liver had high-fat diets. Regarding the prevalence of non-alcoholic fatty liver, lifestyle changes and the implementation of educational interventions to increase awareness and improve the attitude of individuals and conduct appropriate further studies to prevent and treat the fatty liver are necessary.

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Detection of fraud in Korea through Raman spectroscopy and chemometrics methods

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Abstract

Sheep butter is one of the most expensive dairy products that has valuable fatty acids as processing aids and also contains useful nutritional compounds such as fat-soluble vitamins, tocopherols and carotenoids. Due to the high nutritional and commercial value of this product, there is a possibility of adulteration and mixing it with cow butter and margarine. Therefore, it is necessary to carry out studies that confirm the identity of sheep butter more efficiently. In the present study, sheep butter and its mixing with cow butter and margarine were investigated using a Raman spectroscopic microscope, and chemometrics methods were used to analyze its spectral data. In this study, it was shown that the model built for the spectra taken in the region of 400 to 3500 (cm-1) is an effective model with 83.33 sensitivity and 100% selectivity. Therefore, it is a suitable method to detect fraud in sheep butter.

Key words: Butter, Raman spectroscopy, Margarine, Adulterated Food

Pectin extraction from fruit and vegetable wastes by ultrasonic method

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Abstract

Pectin is used in the food, drug, cosmetic and health industry and has emulsifying, stabilizing, binding, thickening and gel properties. High methoxyl pectin is widely used in emulsion stabilization, gel formation and thickening of products such as jam and jelly and low methoxyl pectin can be used in ice cream, as fat replacement in spreads, heat reversible bakery glaze, meat products and diet products, such as diet carbonated drink or fruit yogurt. Considering the role of pectin in Iran's food and pharmaceutical industries, until 2018, 200 tons of pectin have been consumed, which is fully provided by imports. The amount of agriculture wastes in our country is high and many of these products contain pectin. Therefore, extracting pectin and bioactive compounds from the wastes has been given special attention in order to increase added value and reduce the related environmental pollution. The present study deals with the role of ultrasonic method in increasing the efficiency and significantly reducing the extraction time.

Keywords: pectin, ultrasonic, fruit and vegetable, wastes, diet

Probabilistic Risk Assessment of Endocrine Disrupting Pesticides in Iran

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Abstract

The chronic diet risk for 34 pesticides was assessed by comparing TMDI with the Acceptable Daily Intakes (ADI) evaluated by FAO and 6 pesticides had TMDI > ADI. HIs or total HQs in apple were 1.81 for adults and 2.82 for children due to EDPs residue as well as, HI in citrus due to EDPs residue were 1.11 and 1.73 in adults and children. HI of cucumber consumption in children was 1.28, and 1.47 for lettuce, in potato it was 1.38, in rice 1.23 and tomato it was 1.29 more than acceptable level. HQ in wheat was 17.40 and 20.29 in adults and children, respectively. Due to dimethoate residue in wheat, HQ was 2.78, and for fenitrothion residue 3.22. HI was 21.22 for adults and 24.76 for children in wheat, more than 1.Total Carcinogenic risk (TCR) due to EDPs residues was 6.40×10^{-5} in apple, in citrus fruits was 5.97×10^{-5}, 3.33×10^{-5} in cucumber, 5.30×10^{-5} in lettuce, in potato was 2.36×10^{-5}, in rice was 1.61×10^{-5}, 1.78×10^{-5} in tomato, and due to epoxiconazole residues in wheat was 3.18×10^{-5}, more than acceptable limit 1.0×10^{-6}. Therefore, consumers were at significant risk of carcinogenesis in these products.

Keywords: Endocrine Disrupting Pesticides; TMDI; non-carcinogenic risk assessment; carcinogenic risk assessment

Introduction

The term endocrine disruptors (EDs) is commonly used to refer to compounds with common characteristics, namely the ability to mimic the actions of hormones that interfere with the behavior of the endocrine systems in different living species (Yilmaz et al., 2020). On the other hand, endocrine disruption refers to a mechanism of toxicity that hinders the ability of cells, tissues, and organs to communicate hormonally, resulting in a wide variety of adverse health outcomes, including reduced fertility and fecundity, spontaneous abortion, skewed sex ratios within the offspring of exposed communities, male and female reproductive tract abnormalities, precocious puberty, polycystic ovary syndrome, neurobehavioural disorders, impaired immune function and a wide variety of cancers (Schneider et al., 2019; Ewence et al., 2015). Endocrine-disruptors, sometimes also referred to as hormonally active agents or endocrine-disrupting chemical compounds that can interfere with endocrine or hormonal systems (Kahn et al., 2020). These disruptions can cause cancerous tumors, congenital disabilities, and other developmental disorders (Montes-Grajales and Olivero-Verbel, 2020).

Endocrine-disrupting chemicals (EDCs) are compounds that alter the normal functioning of the endocrine system, potentially causing disease or deformity in organisms and their offspring (Kiess et al., 2021). The EDCs can be different chemical groups, such as DDT, chlorpyrifos, atrazine, 2, 4-D, glyphosate as pesticides; lead, phthalates, cadmium in personal care products, polychlorinated biphenyls (PCBs), dioxins and their by-products in industrial solvents or lubricants; bisphenol A (BPA), phthalates, phenol in plastics and food storage materials; polybrominated diphenyl ethers, and pharmaceuticals industry among others (Aditi Sharma et al., 2020). Most of these are released into the environment as a result of anthropogenic activities and may simultaneously accumulate in products and the human body through the food chain, posing a risk to human health and ecosystems (Street et al., 2018; Mnif et al., 2011; Balabanič and Klemenčič, 2018).

Pesticides are used widely to kill unwanted organisms in crops, public areas, homes, and gardens and medicinally to kill parasites (Akanksha Sharma et al., 2020). The growing global population and demand for agricultural products have increased the importance of protecting agricultural products against pests and diseases; hence pesticides are widely used for more food. Many are proven or suspected to be EDs (Kassotis and Trasande, 2021). Endocrine-disrupting pesticides (EDPs) are the largest group of EDCs. Despite all the benefits associated with the use of pesticides, such as pest and disease control for ensuring food security, they still can contaminate different products and environmental compartments (Thilagam and Gopalakrishnan, 2022; Mahdavi et al., 2019). Studies have reported that chronic low-level exposure to most pesticides in the uterus and childhood are associated with poorer cognitive and behavioral problems; some pesticides are also reported as lipophilic compounds, accumulate in sediments, bio-accumulated in biota, and neurotoxic (Zaller, 2020). Numerous researches have indicated that pesticides cause risks to human health and have adverse environmental impacts (Rawtani et al., 2018; Ullah et al., 2018). After use, they remain on or accumulate in agricultural products (Leong et al., 2020). When contaminated goods are consumed, humans are exposed to pesticides, raising carcinogenic and non-carcinogenic risks (Li and

Jennings, 2017). Concerns regarding the probable risks of exposure to pesticides have been exacerbated by their increasing use, and multiple regulatory agencies worldwide are striving to manage these risks (Damalas and Eleftherohorinos, 2011). More than 50 pesticide active ingredients have been identified as endocrine disruptors by the European Union (Kalofiri et al., 2021), which of these 32 cases are registered and applied in the agriculture of Iran.

The objectives of this study were the comprehensive evaluation of registered EDPs of Iran with different aspects for risk assessment of the Iranian population. National Theoretical Maximum Dairy Intake (NTMDI) of EDPs for the first time complying with the WHO procedure (Richter et al., 2018), comparison of values computed based on the ADI (Kumari and John, 2019), assessment the status of established MRLs, the achievement of a risk-based classification for 34 EDPs and conducting a probabilistic analysis for evaluating the probability of exceeding the ADI.

These reports can be used in order to ensure plant protection with a significantly lower risk of contamination, meanwhile emphasizing the need for controls, analytical issues, and positive controls, as well as the possibility of downgrading and withdrawal of approval from the market with elimination or application restrictions of EDPs with high risk. This study shows that although maximum residue limit (MRL) is the maximum amount of pesticide residue that will not be a concern to human health, national MRLs in EDPs with TMDI>ADI, non-carcinogenic and carcinogenic effects need serious attention to review and reduce acceptable levels.

Materials and methods

Data description

List of pesticides and corresponding foods

As shown in **Table 1**, the 34 common EDPs are investigated for agricultural products with MRLs established by the IRIPP as national MRLs.

Consumed food quantities

Daily consumed food quantities of commodities gathered from the statistical center of Iran (https://www.amar.org.ir).

Methodology

Acceptable daily intake sources

The ADI is a widely used factor in assessing a chronic risk to human health due to exposure to pesticide residues (WHO, 1997). To evaluate whether a possible risk to population health exists, the daily consumption of a pesticide is compared with the ADI.

Estimation of exposure

Humans are exposed to EDPs due to their residues in daily food. Theoretically, Pesticide MRL restricts the amount of daily exposure via ingestion. The National Theoretical Maximum Daily Intake (NTMDI) for 34 EDPs was computed based on the national Maximum Residue Limits (MRLs) of food consumption regulations and data from the comprehensive database of the Iranian Research Institute of Plant Protection (IRIPP).

The maximum MRL-limited chronic exposure of a pesticide could be calculated based on the sum of the acceptable amount of the pesticide in the consumed product. This refers to the NTMDI for a pesticide in commonly consumed agricultural commodities. The NTMDI (mg/kg-day) and %ADI were calculated using the following formulas (Equation 1 and 2) (Maggioni et al., 2018):

$$NTMDI = \sum \frac{MRL \times IR \times EF}{Bw} \quad \text{Equation 1}$$

$$\%\ ADI = \frac{NTMDI \times 100}{ADI} \quad \text{Equation 2}$$

MRL; maximum residue limit (mg/kg) of pesticides in the allowable product. EF; exposure factor (unitless). Herein all the computed results are based on the EF of 1.0. Bw; average adult body weight 60 kg. IR; intake rate of the agricultural commodity (kg/day).

Suppose the NTMDI of an EDPs was greater than that of ADI. In that case, it means that the maximum permissible level of the dietary exposure to these EDPs has exceeded the level of human safety, and the MRL of these EDPs in these routinely consumed agricultural products must be seriously reviewed and reduced to the extent necessary to ensure safety.

Risk assessment

Target hazard quotient (THQ) in consumption of investigated commodity calculated by bellow equation (EPA, 1997):

$$\mathrm{THQ} = \frac{\mathrm{EDI}}{\mathrm{ADI}} \qquad \text{Equation 3}$$

Moreover, estimation of daily intake (EDI) was calculated with equation 3:

$$\mathrm{EDI} = \frac{\mathrm{C}\times\mathrm{IR}\times\mathrm{EF}\times\mathrm{ED}}{\mathrm{BW}\times\mathrm{AT}} \qquad \text{Equation 4}$$

Wherever C is the pesticide residue (mg kg^{-1}) in this study, national MRLs used as C; IR, ingestion rate per capita (kg/day); EF, frequency of exposure in a day per year; ED, duration of exposure for adults (70 years) and children (6 years). Bw, body weight 15 kg for children and 70 kg for adults; AT, an average lifetime in days.

Health risks from the summation of total pesticides in goods are computed with the following equation:

$$\mathrm{HI} = \mathrm{HQ1} + \mathrm{HQ2} + \cdots + \mathrm{HQn} \qquad \text{Equation 5}$$

In which HI is hazard index and HQ, hazard quotient. When HQ and/or HI is less than and equal to 1 value, the risk to the consumers' health is admissible, but if the value of HQ and/or HI exceeds 1, the health risk is considered to be alarming for consumers (Mahdavi et al., 2021).

Results

Probability of exceeding the ADI

Based on the worst-case use scenarios, the estimated probability that the acute dietary exposure exceeded the ADI and its uncertainty interval were null for 34 EDPs when both the entire population and only consumers were taken into consideration (Maggioni et al., 2017). To put it another way, 6 pesticide exposure values exceeded the ADI as presented in **Table 1 and Figure 1**. The rank order exceeded TMDI ratio ADI was 2.1 in deltamethrin, 8 in dimethoate, 2 in epoxiconazole, 3 in fenitrothion, 1.3 in fipronil, and 1.1 in mancozeb.

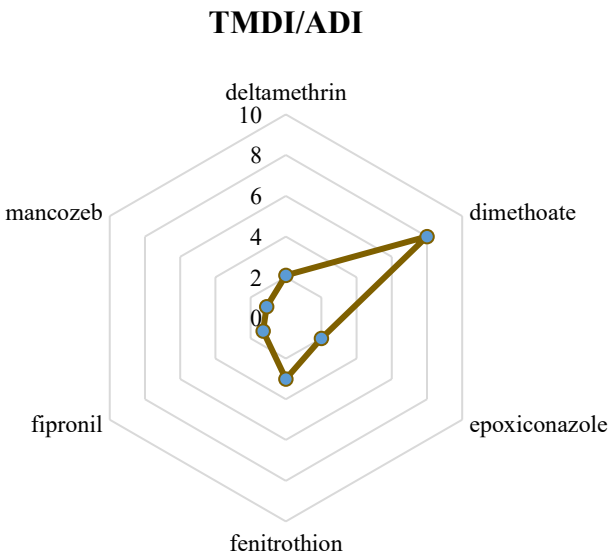

Figure 1. The value of TMDI relative to ADI of EDPs in Iran based on national MRLs database.

Table 1. Some common ED-pesticides with comparison of TMDI and ADI.
In bold, pesticides with TMDI>ADI.

No	Pesticide	Group	Number of registered commodities	TMDI	ADI
1	biterthanole*	fungicide	12	0.005	0.01
2	captan*	fungicide	18	0.034	0.1
3	carbendazim	fungicide	10	0.01	0.03
4	cypermethrin*	insecticide	16	0.006	0.02
5	cyproconazole*	fungicide	5	0.002	0.02
6	deltamethrin*	insecticide	54	0.021	0.01
7	dichlorvos	insecticide	43	0.003	0.004
8	dimethoate	insecticide	54	0.016	0.002
9	epoxiconazole*	fungicide	2	0.004	0.008
10	fenitrothion	insecticide	27	0.018	0.006
11	fenvalerate*	insecticide	22	0.014	0.02
12	fipronil*	insecticide	4	0.00026	0.0002
13	flusilazole	fungicide	2	0.0013	0.007
14	flutriafol*	fungicide	2	0.0034	0.01
15	glyphosate	herbicide	22	0.003	1.0
16	hexaconazole*	fungicide	3	0.014	0.07
17	ioxynil	herbicide	2	0.0002	0.005
18	iprodion	fungicide	14	0.027	0.06
19	linuron	herbicide	3	0.0007	0.003
20	mancozeb	fungicide	42	0.033	0.03
21	metribuzin	herbicide	8	0.002	0.013
22	penconazole*	fungicide	9	0.001	0.03
23	permethrin*	insecticide	39	0.024	0.05
24	pirimicarb	insecticide	46	0.022	0.035
25	pyriproxyfen*	insecticide	8	0.038	0.1
26	prochloraz	fungicide	1	0.0001	0.01
27	promethrin	herbicide	7	0.0004	0.04
28	propanil	herbicide	1	0.003	0.02
29	propiconazole*	fungicide	3	0.014	0.07
30	pyridate	herbicide	4	0.00003	0.036
31	tebuconazole*	fungicide	20	0.005	0.03
32	triadimenole*	fungicide	5	0.0017	0.03
33	trichlorfon*	insecticide	47	0.012	0.045
34	trifluralin	herbicide	14	0.004	0.015

*: enantiomeric endocrine-disrupting pesticides

Health Risk Assessment

Non-Carcinogenic risk

The health risk assessment was based on the MRLs as a mean residue for the worst scenario. HQ values for consumers (adults and children) are indicated in **Table 2** for the most critical commodities due to high consumption as wheat and rice or fresh eating like cucumber, lettuce, and tomato.

Table 2. HQ and HI of non-carcinogenic evaluation for adult and children consumers based on the 100% usage scenario. Results were reported for ED-pesticides which applied in an important products. In bold, pesticides with HQ or HI >1.

Commodity	Pesticide	MRL	HQ -adult	HQ-children	HI-adult	HI-children
Apple	captan	5	0.030	0.047	**1.81**	**2.82**
	cypermethrin	2	0.16	0.24		
	deltamethrin	0.2	0.016	0.024		
	dichlorvos	0.1	0.16	0.24		
	dimethoate	0.1	0.39	0.61		
	fenithrothion	0.2	0.13	0.19		
	fenvalerate	2	0.078	0.12		
	glyphosate	0.2	0.00009	0.00014		
	mancozeb	2	0.0098	0.015		
	penconazole	0.2	0.012	0.019		
	permethrin	2	0.031	0.049		
	pirimicarb	1	0.022	0.035		
	pyriproxyfen	0.4	0.00089	0.0014		
	trichlorfon	2	0.78	**1.22**		
Citrus	deltamethrin	0.05	0.0042	0.0065	**1.11**	**1.73**
	dichlorvos	0.2	0.33	0.52		
	fenithrothion	1	0.67	**1.035**		
	fenvalerate	0.5	0.021	0.032		
	glyphosate	0.5	0.00024	0.00037		
	mancozeb	2	0.010	0.016		
	permethrin	0.5	0.0083	0.013		
	pirimicarb	3	0.071	0.11		
	pyriproxyfen	0.6	0.0014	0.0022		
Cucumber	cypermethrin	0.5	0.023	0.035	0.83	**1.28**
	deltamethrin	0.2	0.0090	0.014		
	deltamethrin	0.2	0.0090	0.014		
	dichlorvos	0.2	0.18	0.28		
	dimethoate	0.1	0.23	0.35		
	iprodione	5	0.11	0.18		
	mancozeb	2	0.0057	0.0088		
	penconazole	0.1	0.0035	0.0054		
	permethrin	0.5	0.0045	0.0070		
	pirimicarb	2	0.026	0.040		
	trichlorfon	1	0.23	0.35		
Lettuce	deltamethrin	0.5	0.043	0.067	0.95	**1.47**
	dichlorvos	0.1	0.17	0.27		

Commodity	Pesticide	MRL	HQ -adult	HQ-children	HI-adult	HI-children
	dimethoate	0.1	0.43	0.67		
	mancozeb	3	0.016	0.025		
	permethrin	2	0.034	0.053		
	pirimicarb	1.5	0.037	0.057		
	trichlorfon	0.5	0.21	0.33		
Potato	deltamethrin	0.3	0.022	0.051	0.59	**1.38**
	dichlorvos	0.1	0.15	0.34		
	dimethoate	0.1	0.37	0.85		
	iprodione	0.5	0.018	0.043		
	mancozeb	0.3	0.0014	0.0032		
	metribuzin	0.6	0.034	0.079		
	permethrin	0.2	0.0029	0.0068		
	pirimicarb	0.05	0.0011	0.0024		
	prometryn	0.05	0.00091	0.0021		
Rice	carbendazim	0.2	0.014	0.022	0.79	**1.23**
	cypermethrin	0.1	0.065	0.10		
	cyproconazole	0.1	0.0072	0.011		
	fenithrothion	0.1	0.12	0.18		
	fipronil	0.1	0.36	0.56		
	iprodione	0.15	0.072	0.11		
	permethrin	0.15	0.029	0.045		
	propiconazole	0.2	0.029	0.045		
	tebuconazole	0.15	0.024	0.037		
	triadimenol	0.2	0.0021	0.0033		
	trichlorfon	0.2	0.072	0.11		
Tomato	dichlorvos	0.2	0.24	0.38	0.83	**1.29**
	dimethoate	0.1	0.30	0.47		
	iprodione	5	0.15	0.23		
	mancozeb	3	0.011	0.018		
	metribuzin	0.5	0.023	0.036		
	penconazole	0.2	0.0093	0.014		
	permethrin	1	0.012	0.019		
	pirimicarb	0.5	0.0086	0.013		
	pyriproxyfen	1	0.0017	0.0027		
	trichlorfon	0.2	0.060	0.094		
	trifluralin	0.1	0.0080	0.013		
Wheat	carbendazim	0.6	0.010	0.012	**21.22**	**24.76**
	cyproconazole	0.2	0.035	0.041		
	deltamethrin	2	0.35	0.41		
	dimethoate	2	**17.39**	**20.29**		
	epoxiconazole	0.6	0.052	0.061		

Commodity	Pesticide	MRL	HQ -adult	HQ-children	HI-adult	HI-children
	fenithrothion	2	**2.78**	**3.25**		
	flusilazole	0.2	0.17	0.20		
	flutriafol	0.5	0.017	0.020		
	iprodione	2	0.17	0.20		
	pirimicarb	0.05	0.0025	0.0029		
	propiconazole	1	0.017	0.020		
	tebuconazole	2	0.12	0.14		
	triadimenol	0.2	0.010	0.012		
	trichlorfon	0.1	0.087	0.10		

HI calculated for EDPs in adults' apple consumers were 1.81 and 2.82 in children, respectively. HQ of trichlorfon was 1.21 in children's consumers, while for other EDPs, HQs were lower than 1 in adults and children. In citrus fruit from nine EDPs, only HQ of fenitrothion was higher than 1. HI from EDPs in citrus fruit were 1.11 for adults and 1.73 for children's consumers. In cucumber commodity, 11 EDPs were registered and applied in our country that HQs of these pesticides were below one for both adults and children, but HI of children was 1.28 times more than 1 as the limit non-carcinogenic effects. HI in adults due to cucumber consumption was 0.82. Similarly, for lettuce, the HQ of seven EDPs registered and applied in lettuce is less than one, but like cucumber, HI in children was 1.47 times higher than 1. HI in adult consumers was 0.94 less than one. From 9 registered EDPs in potato, only HI in children was 1.38 more than 1. HQs of each EDPs were lower than 1, and HI in adults was 0.59 less than 1. 11 EDPs are registered in rice, and all HQ values were lower than 1; however, HI in children was 1.23 in adults 0.79. In tomato products, 11 EDPs are applied. HQ of each pesticide and HI of adults are lower than 1, HI in children is 1.29. 14, EDPs are registered in wheat, HQ due to dimethoate is 17.40 times more than 1 in adults and 20.29 times the permissible limit in children, and because of the fenitrothion consumption, HQ in adults is 2.78 and 3.25 in children. HI of EDPs residue in wheat is 21.22 and 24.76 in adults and children, respectively. HQ and HI of non-carcinogenic evaluation for adult and children consumers based on the 100% usage scenario are presented in **Table 2**. In bold, EDPs with HQ or HI >1. As shown in **Figures 2 and 3**, dimethoate in wheat with 17.4 and 20.3 times, fenitrothion in wheat with 2.8 and 3.2 times, trichlorfon in apple with 0.78 and 1.22 times, and fenitrothion residue in citrus fruits with 0.67 and 1.04 times to acceptable level are the most HQs in adults and children, respectively.

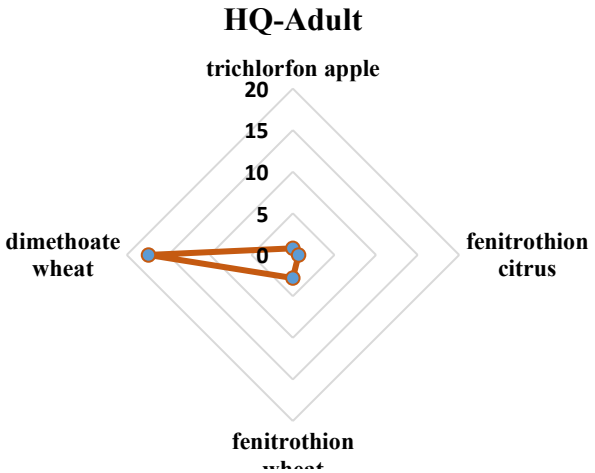

Figure 2. HQs of EDPs for adult consumers based on national MRLs database.

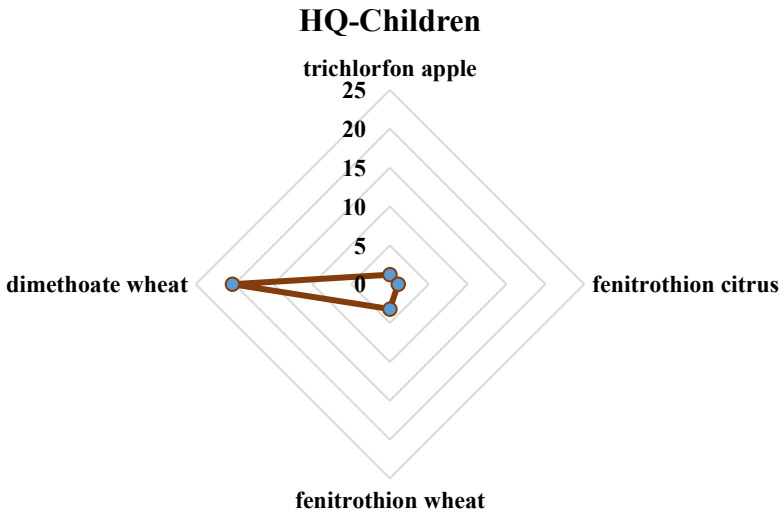

Figure 3. HQs of EDPs for children consumers based on national MRLs database.

Carcinogenic risk

Fourteen EDPs are applied in apples, carcinogenic risk (CR) due to captan was 1.37×10^{-5}, for cypermethrin residue it was 5.48×10^{-6}, in dichlorvos 2.27×10^{-5}, mancozeb with the value 7.05×10^{-6} and for permethrin residue in apple, it was 1.50×10^{-5} more than the permissible limit 1.0×10^{-6} in cancer assessment. Therefore, total carcinogenic risk (TCR) due to these pesticide residues was 6.4×10^{-5}, which means in apple consumption, the carcinogenic risk is probable. In citrus fruits, due to dichlorvos residue, the CR value was 4.82×10^{-5}. For mancozeb residue, it was 7.49×10^{-6}, and in permethrin, it was 3.99×10^{-6}, and TCR from nine EDPs residue in citrus fruits was 5.97×10^{-5} more than the acceptable limit, and citrus consumption has a potential risk of carcinogenic. Due to dichlorvos residue in cucumber, CR was 2.62×10^{-5}. For mancozeb residue, it was 4.07×10^{-6}; and in permethrin residue, it was 2.17×10^{-6}. Accordingly, TCR from ten EDPs residue in cucumber was 3.33×10^{-5}, and it was more than the acceptable limit and means precautions against carcinogenic risk in cucumber consumption should be considered. In lettuce, about seven EDPs are applied due to dichlorvos residue CR was 2.49×10^{-5}, in mancozeb with the values 1.16×10^{-5} and permethrin residue in lettuce was 1.65×10^{-5}, TCR in lettuce due to EDPs residue was 5.30×10^{-5}. In potatoes, about 9 EDPs are registered and applied due to dichlorvos and permethrin residue in potato CR were 2.12×10^{-5} and 1.41×10^{-6}, respectively, and TCR was about 23 times more than the acceptable limit of cancer risk. Due to cypermethrin and permethrin residue in rice, CR values were 2.27×10^{-6}, 1.39×10^{-5}, and TCR was because of eleven EDPs residue in rice 1.61×10^{-5} about 16 times more than the acceptable limit of cancer risk. About 11 EDPs are registered in tomato products, only CR due to dichlorvos was 3.50×10^{-6}, mancozeb 8.14×10^{-6}, and permethrin 5.79×10^{-6} TCR was 1.78×10^{-5}, about 17 times more than the permissible level. In wheat, about fourteen EDPs are registered, only due to epoxiconazole in wheat CR was 3.17×10^{-5}, and TCR was 31 times more than the acceptable limit 1.0×10^{-6}, so consumers were at significant risk of carcinogenesis in wheat consumption.

Table 3. CR and TCR of carcinogenic evaluation for adult and children consumers based on the 100% usage scenario. Results were reported for ED-pesticides which applied in an important products. In bold, pesticides with CR or TCR >1.0E-6. NE: Not Evaluated

Commodity	Pesticide	Chemical Group	EPA Group	Cancer Slope Factor	CR	TCR
Apple	captan	phthalimide	B	3.5×10^{-3}	**1.37×10^{-5}**	**6.40×10^{-5}**
	cypermethrin	pyrethroid	C	3.5×10^{-3}	**5.48×10^{-6}**	
	deltamethrin	pyrethroid	E	NA	-	
	dichlorvos	organophosphate	C	2.9×10^{-1}	**2.27×10^{-5}**	
	dimethoate	organophosphate	C	NA	-	

Commodity	Pesticide	Chemical Group	EPA Group	Cancer Slope Factor	CR	TCR
	fenithrothion	organophosphate	E	NA	-	
	fenvalerate	pyrethroid	E	NA	-	
	glyphosate	organophosphorus	2A	NA	-	
	mancozeb	dithiocarbamate	B	4.5×10^{-3}	**7.05×10^{-6}**	
	penconazole	triazole	-	NA	-	
	permethrin	pyrethroid	B	9.6×10^{-3}	**1.50×10^{-5}**	
	pirimicarb	carbamate	B	NA	-	
	pyriproxyfen	Juvenile hormones	E	NA	-	
	trichlorfon	organophosphate	B	NA	-	
Citrus	deltamethrin	pyrethroid	E	NA	-	**5.97×10^{-5}**
	dichlorvos	organophosphate	C	2.9×10^{-1}	**4.82×10^{-5}**	
	fenithrothion	organophosphate	E	NA	-	
	fenvalerate	pyrethroid	E	NA	-	
	glyphosate	organophosphorus	2A	NA	-	
	mancozeb	dithiocarbamate	B	NE	**7.49×10^{-6}**	
	permethrin	pyrethroid	B	9.6×10^{-3}	**3.99×10^{-6}**	
	pirimicarb	carbamate	B	NE	-	
	pyriproxyfen	Juvenile hormones	E	NA	-	
Cucumber	cypermethrin	pyrethroid	C	3.5×10^{-3}	7.91×10^{-7}	**3.33×10^{-5}**
	deltamethrin	pyrethroid	E	NA	-	
	dichlorvos	organophosphate	C	2.9×10^{-1}	**2.62×10^{-5}**	
	dimethoate	organophosphate	C	NA	-	
	iprodione	carboxamide	B	1.8×10^{-6}	4.07×10^{-9}	
	mancozeb	dithiocarbamate	B	NE	**4.07×10^{-6}**	
	penconazole	triazole	-	NA	-	
	permethrin	pyrethroid	B	9.6×10^{-3}	**2.17×10^{-6}**	
	pirimicarb	carbamate	B	NE	-	
	trichlorfon	organophosphate	B	NA	-	
Lettuce	deltamethrin	pyrethroid	E	NA	-	**5.30×10^{-5}**
	dichlorvos	organophosphate	C	2.9×10^{-1}	**2.49×10^{-5}**	
	dimethoate	organophosphate	C	NA	-	
	mancozeb	carboxamide	B	NE	**1.16×10^{-5}**	
	permethrin	pyrethroid	B	9.6×10^{-3}	**1.65×10^{-5}**	
	pirimicarb	carbamate	B	NE	-	
	trichlorfon	organophosphate	B	NA	-	
Potato	deltamethrin	pyrethroid	E	NA	-	**2.36×10^{-5}**

Commodity	Pesticide	Chemical Group	EPA Group	Cancer Slope Factor	CR	TCR
	dichlorvos	organophosphate	C	2.9×10^{-1}	**2.12×10^{-5}**	
	dimethoate	organophosphate	C	NA	-	
	iprodione	carboxamide	B	1.8×10^{-6}	6.59×10^{-10}	
	mancozeb	carboxamide	B	NE	9.88×10^{-7}	
	metribuzin	triazines	D	NE	-	
	permethrin	pyrethroid	B	9.6×10^{-3}	**1.41×10^{-6}**	
	pirimicarb	carbamate	B	NE	-	
	prometryn	triazines	E	NE	-	
Rice	carbendazim	benzimidazole	C	NE	-	**1.61×10^{-5}**
	cypermethrin	pyrethroid	C	3.5×10^{-3}	**2.27×10^{-6}**	
	cyproconazole	azoles	B2	NE	-	
	fenithrothion	organophosphate	E	NA	-	
	fipronil	phenylpyrazole	C	NA	-	
	iprodione	carboxamide	B	1.8×10^{-6}	2.60×10^{-9}	
	permethrin	pyrethroid	B	9.6×10^{-3}	**1.39×10^{-5}**	
	propiconazole	triazole	C	NE	-	
	tebuconazole	triazole	C	1.0×10^{-5}	7.22×10^{-9}	
	triadimenol	triazoles	C	NE	-	
	trichlorfon	organophosphate	B	NA	-	
Tomato	dichlorvos	organophosphate	C	2.9×10^{-1}	**3.50×10^{-6}**	**1.78×10^{-5}**
	dimethoate	organophosphate	C	NA	-	
	iprodione	carboxamide	B	1.8×10^{-6}	5.42×10^{-9}	
	mancozeb	carboxamide	B	NE	**8.14×10^{-6}**	
	metribuzin	triazines	D	NA	-	
	penconazole	triazole	-	NA	-	
	permethrin	pyrethroid	B	9.6×10^{-3}	**5.79×10^{-6}**	
	pirimicarb	carbamate	B	NE	-	
	pyriproxyfen	Juvenile hormones	E	NA	-	
	trichlorfon	organophosphate	B	NA	-	
	trifluralin	benzenes	C	5.8×10^{-3}	3.50×10^{-7}	
Wheat	carbendazim	benzimidazole	C	NE		**3.18×10^{-5}**
	cyproconazole	azoles	B2	NE		
	deltamethrin	pyrethroid	E	NA		
	dimethoate	organophosphate	C	NA		
	epoxiconazole	azoles	B	3.0×10^{-2}	**3.17×10^{-5}**	
	fenithrothion	organophosphate	E	NA		

Commodity	Pesticide	Chemical Group	EPA Group	Cancer Slope Factor	CR	TCR
	flusilazole	organosilicon	-	NE		
	flutriafol	triazoles	E	NE		
	iprodione	carboxamide	B	1.8×10^{-6}	6.26×10^{-9}	
	pirimicarb	carbamate	B	NE		
	propiconazole	triazole	C	NE		
	tebuconazole	triazole	C	1.0×10^{-5}	3.48×10^{-8}	
	triadimenol	triazole	C	NE		
	trichlorfon	organophosphate	B	NA		

NE: Not Evaluated

NA: Not Applicable

As shown in **Table 3**, for some EDPs due to lack of cancer slope factor or cancer potency, carcinogenic risk assessments were not evaluated, although suggestive evidence of carcinogenicity for some of them was reported. Therefore, control programs such as GAP and/or IPM, dose management, time, and method of application are essential. Cypermethrin in apple with 54.8 times more than the acceptable limit, dichlorvos in citrus fruit with 48.2 times, epoxiconazole in wheat with 31.7 times, dichlorvos in cucumber, lettuce, apple, and potato with 26.2, 24.9, 22.7, and 21.2 times respectively have the most deviation from the allowable limit and are illustrated in **Figure 4**.

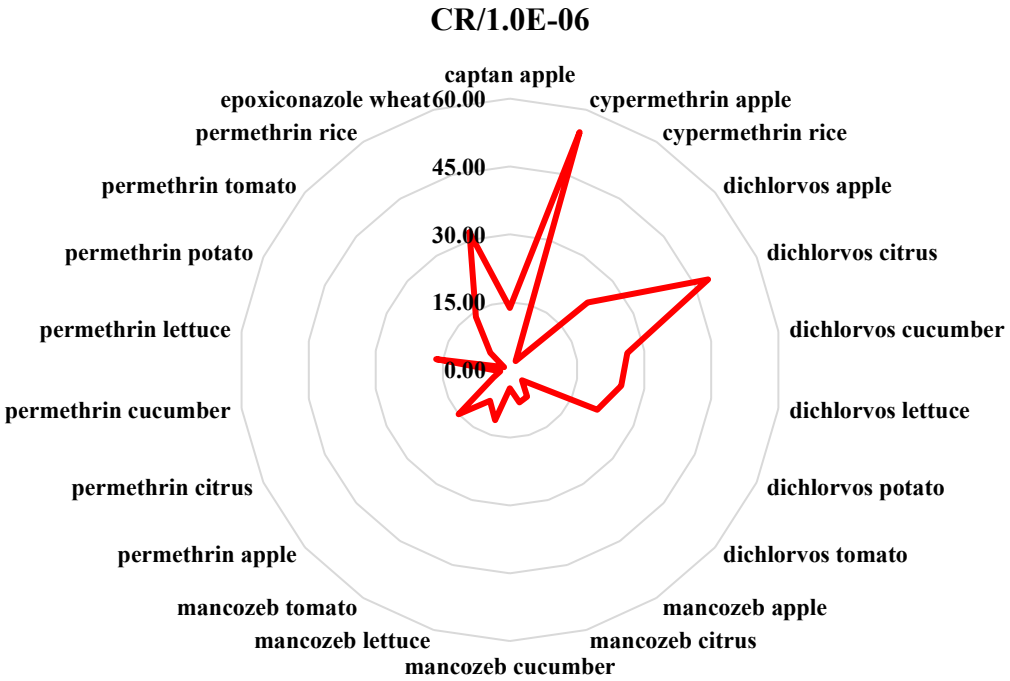

Figure 4. The value of CR relative to carcinogenic risk level (1.0×10^{-6}) of EDPs based on national MRLs database.

Enantiomer pesticides of EDPs in Iran

More than 30 percent of the pesticides used worldwide in agricultural and non-agricultural processes are chiral (Hu et al., 2020).

Due to the development of pesticide synthesis technology, the ratio of chiral pesticides increases

(Liu et al., 2009). New research has shown that pyrethroids, triazoles, carbamates, organochlorines, and organophosphorus pesticides always affect hormones (Tian et al., 2015). In addition, many studies have shown that enantiomer pesticides can have different effects on environmental behavior, activity, and non-targeted organisms (Ye et al., 2010). Many studies have shown that enantiomer pesticides have permanent physico-chemical properties under achiral conditions. However, significant selective stereo differences were found between enantiomer pesticides in their environmental behaviors, activities, acute/ chronic toxicity, cytotoxicity, and potential toxicity of non-target organisms (Ye et al., 2010). However, limited studies have shown that chiral pesticides have significant disruptive effects on stereoselective endocrine glands (Gámiz et al., 2016). The primary mechanism of endocrine-disrupting chemicals (EDCs) disrupts hormone synthesis processes, secretion, metabolism, and receptors binding; It further affects the human reproductive system and growth. EDCs can interact with nuclear hormone receptors, thus having adverse effects on human health (Basheer, 2018).

From 34 EDPs in Iran, about 56% of them are enantiomers, including acephate, atrazine, bitertanol, captan, cypermethrin, cyproconazole, deltamethrin, epoxiconazole, fenvalerate, fipronil, flutriafol, hexaconazole, penconazole, permethrin, propiconazole, pyriproxyfen, tebuconazole, triadimenol and trichlorfon.

Discussion

Like many countries in the world, pesticides in Iran have been proposed as the most critical method for pest control, and about 30 thousand tons of these chemical compounds are used in agriculture annually. These compounds are one of the most powerful tools available for pest management, which have a wide range of effects and are widely used in practice. They are also resilient and economical in dealing with agricultural changes and ecological conditions. In some cases, pesticides are the only means of pest management that need to be used when the pest population reaches the threshold of economic damage or more. On the other hand, when pesticides are used within the framework of the pest management program and taking into account the ecological and environmental aspects, they are considered a valuable and reliable tool. The use of pesticides is the source of many problems for humans and the environment, and the pesticide residue in agricultural products and the environment are one of these problems.

Considering the results of risk assessment from 3 different aspects, it is concluded that fenitrothion and dimethoate insecticides and acaricides with all present evaluation methods have a very high risk and deviate from acceptable limits, while fenitrothion applied in more than 27 different products and dimethoate registered or recommended on 54 various agricultural products.

Chiral pesticides make up more than 30% of current pesticides. The proportion of chiral pesticides is increased (Tian et al., 2015). Some studies have shown that stereoselective chiral pesticides show significant endocrine-disrupting effects. Human exposure to synthetic or naturally occurring EDPs is associated with disrupting endocrine signaling and homeostatic imbalance of hormones. Pyrethroids constitute an important class of extensively used insecticides reported to have endocrine-disrupting activity. Permethrin, cypermethrin, and deltamethrin are the most commonly used pyrethroids in Iran and exist in isomeric forms. More than fifty percent of EDPs in Iran are enantiomers. This fact shows the need to pay more attention to the EDPs of Iran.

The risk assessment of the studied pesticides showed that the variety and amount of pesticide application has a great impact on the risk of pesticides. Those involved in the registration and recommendation of pesticides should be careful about the risks of expanding the scope of use and prevent the registration and expansion of the scope of indiscriminate use of pesticides. Pesticide users should also refrain from indiscriminate and unprofessional use of pesticides. A pesticide with low inherent risks can be very dangerous if used on different crops.

Conclusions

This study aimed to investigate the status of national MRLs of EDPs in Iran. Results show that a profound revision of the range of application, dosage, variety of application, and national legislation MRLs of this EDPs in Iran should be considered to increase the community's level of safety and health. In this study, the values of national MRLs for EDPs were evaluated from different aspects of health. At first, the TMDI of EDPs compares to ADI. More than 18% of EDPs had TMDE above ADI like deltamethrin, dimethoate, epoxiconazole, fenitrothion, fipronil, and mancozeb (**Figure 1**). Totally, 545 MRLs of the National MRLs database belong to EDPs. EDPs are registered or recommended for about 75 different agricultural products. This means that these EDPs are applied on almost all types of agricultural products, including vegetables, tuberous, leafy, fatty, and watery, various fruits,

cereals, and oilseeds. Some agricultural products, including apple, citrus, cucumber, lettuce, potato, rice, tomato, and wheat, were investigated and examined in carcinogenic and non-carcinogenic assessment. In non-carcinogenic assessment, all investigated products have a significant threat for children and apple, citrus, and wheat consumption for adult's consumer. In carcinogenic evaluation, almost all products had a noticeable threat to consumers. Meanwhile, 19 cases of 34 EDPs have enantiomer properties, which due to the high potential of endocrine disrupting by this EDPs, a serious review of these pesticides should be on the agenda of our country's Plant Protection Organization. This study highlighted more aspects of pesticide registration. Besides, the efficacy of the pesticide residues should be considered. This scrutiny is essential for improving risk assessment, regulation, and surveillance of the activities.

Considering the results of risk assessment from 3 different aspects, it is concluded that fenitrothion and dimethoate pesticides in all three evaluation methods have a very high risk and deviate from acceptable limits.

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Evaluation of frozen par-baked strudel containing germinated quinoa flour and *Lepidium Sativum* Seed gum

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Abstract

The aim of this study was improvement of quality and appearance of frozen par baked strudel by using *Lepidium Sativum* seed gum (0, 0.25 and 0.50 %) and germinated quinoa flour (0, 5, 10 and 15%). Moisture (2 and 72 hours), specific volume, porosity, texture (2 and 72 hours), color of crust and crumb, sensory properties and overall acceptability of strudel were evaluated. The result showed moisture was increased by increasing gum and quinoa flour in the formulation. The lowest firmness and the highest specific volume and porosity were showed in the sample containing 5% quinoa flour and 0.5% gum and the sample containing 10% quinoa flour and 0.5% gum. Also, a^* of crust and L^* of crumb were increased by using quinoa flour. Replacement of wheat flour with quinoa flour (up to 10%) and *Lepidium Sativum* seed gum (0.25 and 0.50 %) were improved color, shape, chewiness, taste and odor and overall acceptability.

Keywords: a-amylase, Native gum, Strudel, Quinoa.

Evaluation the quality and quantity of doughnut containing natural extract (green tea) and ascorbic acid

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Abstract

In the present study the the quality and quantity of doughnut affected by the added green tea extract (0, 100, 150 and 200 ppm) and ascorbic acid (0, 50,100, 150 ppm) were studied with the use of Principal Component Analysis (PCA). The results showed the effect of those compounds on peroxide index and radical scavenging activity. Moreover the alterations between the studied parameters and their relationships were detected negatively on the peroxide index of the product. On the other hands, the addition of green tea extract and ascorbic acid showed that, they might affect positively on the samples and create novel relationships among the studied parameters of the products. Also, the achieved outcomes have not presented synergistic effects of ascorbic acid on green tea extract in the concentration of 50 ppm. While the higher level of ascorbic acid in the concentration of (100 and 150 ppm), in the presence of three concentrations of the green tea extract, presented considerable effects on the general acceptance among different parameters detected with the use of Principal Component Analysis. On the other hand the tiny presence of the green tea extract as well as ascorbic acid in the extracted oil presented more predominant effect of green tea extract on the studied physicochemical properties of the product in comparison to ascorbic acid.

Keywords: Texture, Grean tea, Ascorbic aid, Sensory properties, Principal component analysis .

Introduction

Doughnut based on its textural properties is categorized in the fried and gelatinized groups. The fried part is prepared by the direct contact to the oil. This part due to having tender texture and golden brown colour has the highest range of oil absorption and the moisture repulsion. The crumb achieved by starch gelatinization process has two types of texture including soft and porous (Rehman et al., 2007). The oil application in food products might reach 50% of total weight of the product, in doughnut, based on its formulation and processing conditions, it might reach the range of 10-26% (Garcıa et al., 2004). Regarding the highest quantity of unsaturated fatty acids in doughnut's texture, the product might lose its physicochemical and nutritional properties due to oxidation reactions. The produced byproducts by oxidation are considered as the most considerable parameters in revealing undesirable alterations in taste, odor and appearance of the obtained products and as a result reduce the obtained products' acceptance among customers (Pezzuto et al., 2002). Therefore, the application of antioxidants as delaying and controlling agents against oxidation reactions in the products has attracted more attention these days. In this regard, the commercial antioxidants including butylated hydroxy anisole (BHA) and butylated hydroxy toluene (BHT) categorized in synthetic antioxidants are extensively used to reduce the oxidation rate of oils in food products. However the unhealthy properties of the synthetic antioxidants have been proved by different studies (Goodman et al., 1990; Botterweck et al., 2000). Thus discovering and application of natural antioxidants in food products are very important. Natural antioxidants including Tocoferols, Carotenoids and ascorbic acid have been known from ancient time and many studies have been performed on different properties of these antioxidants (Xu et al., 2001; Paıva et al., 1999) . Phenols are other compounds with bioactivity (Dımıtrıos., 2006). These compounds along with having acceptable antioxidant activities that increases shelf life of foods might also enhance the health properties of the products. The green tea due to containing Cathechins (Epigallocatechin gallate and Epicatechin gallate) is considered as a considerable source of natural antioxidants (Peres et al., 2011). On the other hand, the performed studies have shown the synergistic effect of ascorbic acid on the antioxidative activities of phenolic compounds of green tea (Dai et al., 2008; Li et al., 2010). Furthermore, the addition of ascorbic acid in cereal flour based dough might improve the technological and sensory properties of the final produced product (Dagdelen and Gocmen., 2007). Therefore, the addition of green tea in combination of ascorbic acid in the initial formulation of Doughnut with the established health properties, might improve the qualitative and quantitative

properties of the final products with the use of synergistic properties. In the current research, the effects of the added green tea extract and ascorbic acid on the produced doughnut properties with the use of Principle Component Analysis (PCA) as one of the important multi factorial data analysis have been studied. The aim of the present study is to research the correlation between the technological and sensory properties of the produced doughnut enriched by natural antioxidants including green tea extract and ascorbic acid. In other words with the use of Principle Component Analysis (PCA), the hidden and unrecognized behaviors among different properties of the products might be studied to clarify the alteration's rate and relationships between different studied parameters.

Material and methods

The green tea leaves have been washed with distilled water, ground (with an electrical grinder model National, K039131) and sieved (mesh size of 0.425 mm) until reaching uniform particles. The obtained particles were mixed with distilled water with the proportion of 1/35, then the mixed and stirred well with the rate of 70 rpm. The prepared suspension was filtrated with the use of a Whatman filter paper. Afterward the filtrated extract was concentrated with the use of a rotary evaporator (Model Strike 202-Made in Italy) with the rate of 66 rpm, temperature of 60 C for 43 minutes until reaching suspension with the value of brix equals to 40. Then the concentrated suspension was dehydrated by 4% based on dry weight with the use of a rotary evaporator (Model VO 400-Made in Germany), in temperature below 40 C. Finally the obtained samples were sealed and preserved in glass containers by the experimental day (Duh and Yen., 1997).

Doughnut preparation

White flour (degree of extraction equals to 77%) was provided from Gholmakan factory (Mashhad-Iran), active dry yeast (Saccharomyces cerevisiae) was purchased from Razavi factory (Mashhad-Iran), improver was collected from Delsa food industry factory with commercial name of Poyesh (Mashhad-Iran), oil was bought from Narges oil company (Shiraz-Iran). Further materials including sugar, salt as well as vanilla were purchased from local market in Mashhad (Iran). The compounds and materials including green tea extract and ascorbic acid in the concentrations of 0, 100, 150 and 200 ppm and 0, 50, 100 and 150 ppm have been applied respectively. The ingredients of the prepared dough as well as oil without synthetic antioxidants were mixed with the rate of 120 RPM (using a standard mixture model Hugel, No. HG550TMEM), after the primitive fermentation process for 45 min was completed (at temperature equals to 40 C and relative humidity of 80%), the obtained dough has been spread manually and was formatted with internal and external diameters equals to 2.5 and 6 cm respectively. The final fermentation stage was performed in specific conditions (for 15 minutes at 40 C and relative humidity of 80%). After that, the samples were fried in a fryer (Model Black & Decker, Type 01) for 4 minutes at 150 C. The fryer tank was filled by 1.5 liter of oil. To establish the oil temperature, the fryer was turned on 1 hour before the frying process. The produced samples after cooling down at room temperature (20 C), were packed and preserved for 30 minutes in PET containers (Zolfaghari et al., 2013; Funami et al., 1999). It should be mentioned that the secreted oil in Doughnut surface after frying and prior cooling down, was removed with the use of an Absorbent tissue. The standard samples were prepared with the use of commercial oils containing synthetic antioxidants.

Peroxide Index

The peroxide index was determined with the use of the approach described previously with the use of the following equation (Shantha and Decker., 1994).

$$PV = \frac{(Aa - Ab) \times m}{55.84 \times W \times 2}$$

Where, PV presents peroxide index, Aa indicates the absorbance of the sample in the wavelength equals to 500 nm, Ab demonstrates the absorbance of the standard in the wavelength equals to 500 nm, m is the achieved slope by the calibration curve (40.86 with Explanation factor equals to 0.99) and W expresses the oil weight.

Crust and crumb colour values

The colour parameters of crust and crumb were detected via three parameters including L^*, a^*, b^*. L^* parameter shows the brightness of the sample in the range of 0 for pure back to 100 for pure white colour. a^* parameter presents proximity between the green and red colors in the range of -120 for pure green to +120 for pure red. b^* parameter defines the proximity between the blue and yellow colour in the range of -120 for pure blue to +120 for pure yellow. To determine these parameters, pieces with the size (area) of 2×2 cm from the surface and crumbs with the use of an electric saws (model 41600, 120 w) were collected, then with the use of a scanner (model HP Scanjet G3010), images were taken with the clarity of 300 pixel. Thereafter the taken images were evaluated with

the use of LAB space in part Plugins of the mentioned software, and the aforementioned colour parameters were determined (Sun., 2008).

Porosity

To evaluate the porosity value of doughnut's crumb, the analysis technique was applied. For this purpose, pieces in the size (area) of 2×2 cm of crumb of the produced doughnuts were provided with the use of an electric saws (model 41600, 120 w), then using a scanner (model HP Scanjet G3010), the required images were taken with the clarity of 300 pixel. The taken images were analyzed by Image J (ordered by National Institute of Health-the USA), with activation of part Bit of the software, and the gray images were created. To convert the gray images to binary ones, Binary section of the software got activated. These images are a collection of bright and dark points where the proportion of bright points to dark ones is an index of the porosity of the samples. It is obviously understood that, the more proportion the more porosity of the achieved breads might exist. Actually with activation of the relevant part of the software, this proportion might be determined and as a result, the porosity value of the samples could be measured (Haralıck.,1973).

Moisture content

To determine this value, the AACC 2000, pages 16-44 and the following equation was applied. For this purpose the samples were placed into an oven (Jeto Tech, model OF-O2G, made in South Korea) with the temperature of 100-105 C.

$$\mathrm{MC} = \frac{\mathrm{m1} - \mathrm{m2}}{\mathrm{m0}} \times 100$$

Where m_0 indicates the samples' weight, m_1 expresses the weight of the plate plus sample before placing in oven and m_2 demonstrates the plate's plus sample's weight after passing oven stage.

Water activity (a_w)

The water activity of the samples have been detected with the use of an equipment (Novasina ms1-aw, model AXZIR Ltd, made in Switzerland) after the samples were cooked and cooled down to 20 C (Sahraiyan et al., 2013).

Volume

To detect the volume of the produced Doughnut, Rape seed displacement has been applied according to AACC 2000 standard number of 72-10.

Texture

The texture of the samples has been studied using a texturometer (Farnell Model QTS-CNS made in UK) and squeeze test. In this regard, uniform cubic pieces with dimensions of 2×2×2 cm were collected. Then a tubular probe made from aluminium with the diameter of 25 mm with the rate of 1 mm. s^{-1} started moving, after the direct contact of it with the samples' surface, 75% of the height of the samples were compressed (Seyhun et al., 2003).

Sensory properties

For this purpose, 10 different juries from faculty of Khorasan Razavi Agricultural Research and Education Center (Mashhad-Iran) according to triangular test and Gacula and Singh (1984) approach, were determined. Afterward, the sensory properties of doughnut and the presence of internal porosity and space as well as further sensory properties of Doughnut including form and shape, the upper part's properties of doughnut, the properties of the crumbs, porosity, the softness and hardness, chewing ability, odor and taste, have been detected and ranked as the following respectively 4, 2, 1, 2, 2, 3, 3 where 1 expresses the weakest and 5 indicates the highest or the most acceptable score. With having these scores, the general acceptance (doughnut quality) has been determined with the use of the following equation

$$\mathrm{Q} = \frac{\sum(\mathrm{P} \times \mathrm{G})}{\sum \mathrm{P}}$$

Where Q presents the general acceptance, p indicates the attribution ratio and G shows the attributed evaluation coefficient.

Statistical analysis

To study the relationship between different detected parameters in the current study and the results of the replacement of synthetic antioxidants with the natural ones (green tea extract and ascorbic acid), Principal Component Analysis and Minitab software version 17 was applied.

Results

The analysis of the relationship between the quantitative and qualitative parameters in the presence of synthetic antioxidants

Main Component Analysis (MCA) on the quantitative and qualitative parameters of the samples has been shown in figure 1. The relationship between the detected parameters in the current research based on their location has presented that peroxide index has negative relationship with water activity of the achieved products.

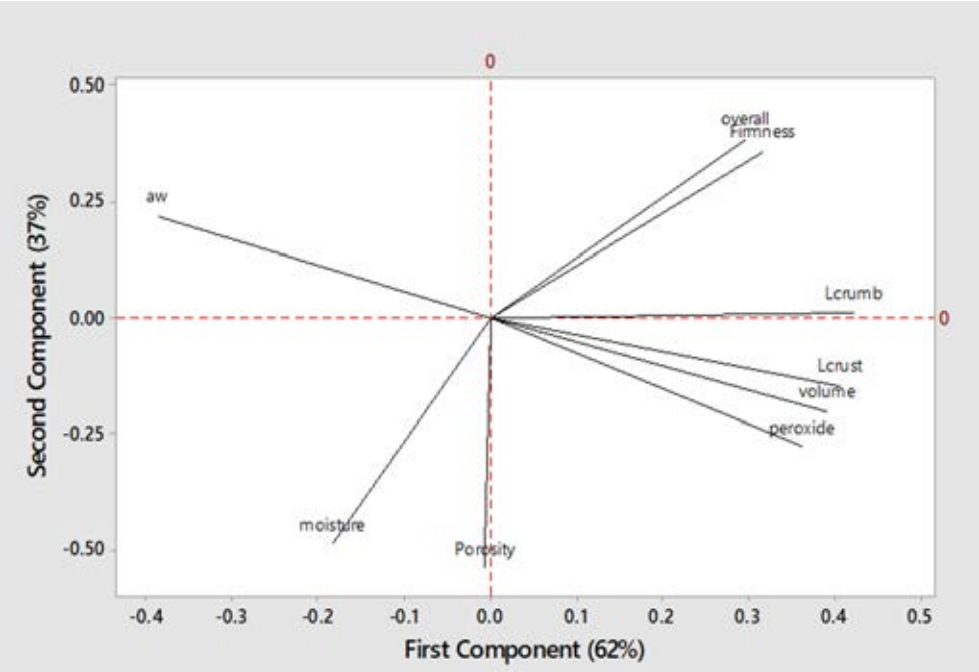

Fig. 1. Relationships Between Physicochemical Properties in the Control Sample

The analysis of the relationship among qualitative and quantitative properties of the products with the addition of green tea extract

Figures 2, 3 and 4 respectively present the alterations in the detected parameters of the product with enhancement in green tea extract. As shown in figure 2, in the presence of 100 ppm green tea extract, the peroxide index showed negative relationship with the volume and moisture content of the product. On the other hand, the achieved results presented that, the moisture content and volume of the samples have shown positive relationship with each other. The correlation between the abovementioned parameters might be due to the effect of green tea extract in the concentration of 100 ppm on both of brightness parameters of crust and crumb. The alterations between different parameters including porosity, firmness and general acceptance, were recorded positively. The relationship between the porosity and firmness on standard product's texture also indicated the similar effect of those with synthetic antioxidants and green tea extract in the level of 100 ppm.

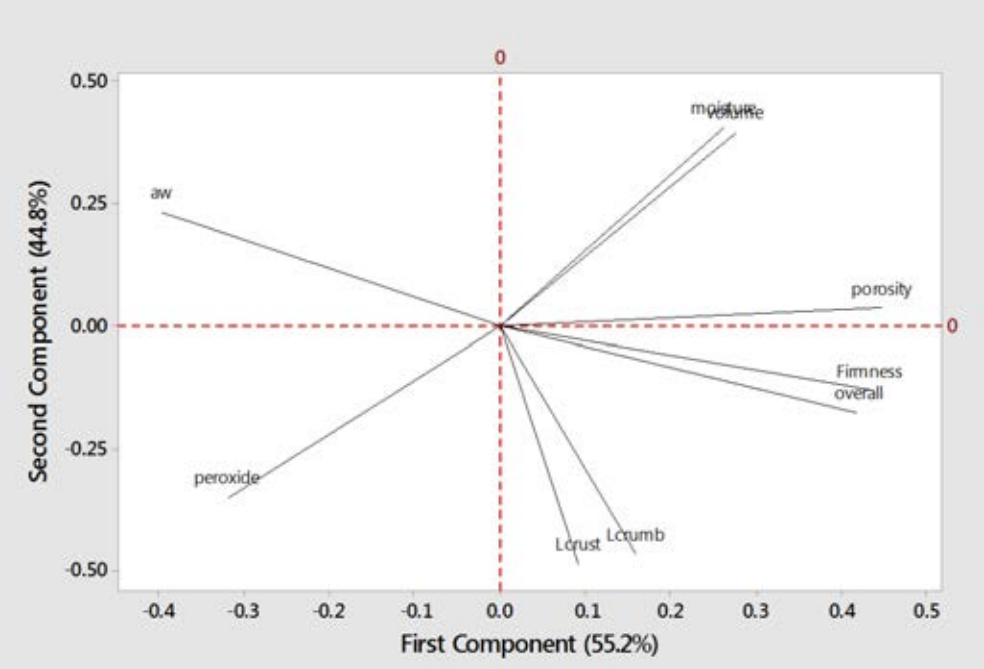

Fig. 2. The relationship between the physicochemical properties in the presence of 100 ppm of green tea extract

Figure 3 indicates the alterations between detected parameters of doughnut with enhancements in the level of green tea extract up to 150 ppm in dough formulation. As it is observed, relationship between the peroxide index and firmness parameters is negative. It means that in samples containing 150 ppm green tea extract, with enhancement in peroxide index, firmness value presented negative alterations.

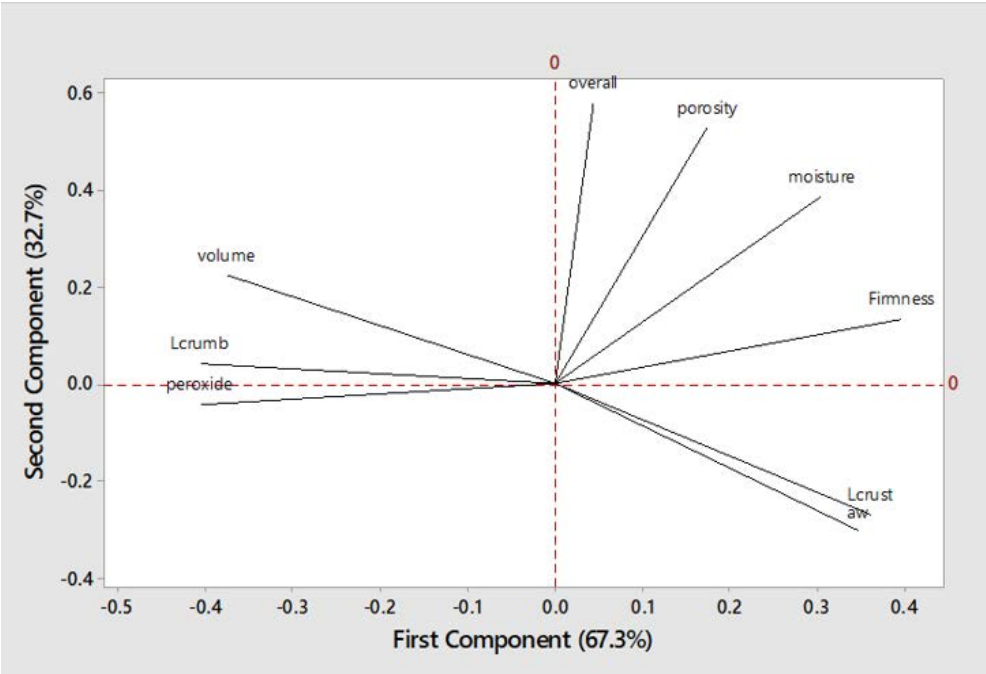

Fig. 3. The relationship between the physicochemical properties in the presence of 150 ppm of green tea extract

Figure 4, demonstrates the addition of 200 ppm green tea extract and its effect on the detected parameters in the current study. As shown, the relationship between the peroxide index and firmness was positive. The effects of additional green tea extract might be justified by the reduction in peroxide index compared to 150 ppm green tea extract and as a result its tiny effect on the physicochemical properties of the product. Also such an alterations on the crumb of doughnut showed negative effects with the firmness and peroxide index of the products. The highest alterations in brightness parameter of doughnut's crust and its crumb presented negative effects with moisture content.

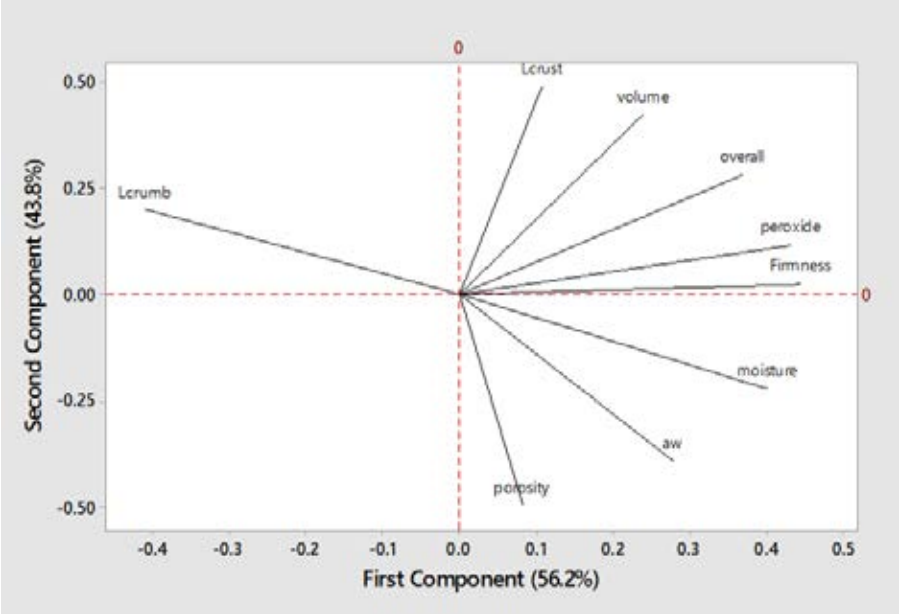

Fig. 4. The relationship between the physicochemical properties in the presence of 200 ppm of green tea extract

Analysis of the relationship between the qualitative and quantitative parameters of the product with the addition of ascorbic acid

The figures 5 to 7 respectively show the relationship between different detected doughnut parameters and enhancements in ascorbic acid level. As shown in figure 5, the relationship between peroxide enzyme and brightness of doughnut's surface is negative. The negative relationship in the presence of 50 ppm ascorbic acid might be justified by the oxidative activity of ascorbic acid and as a result the alterations of peroxide index in product.

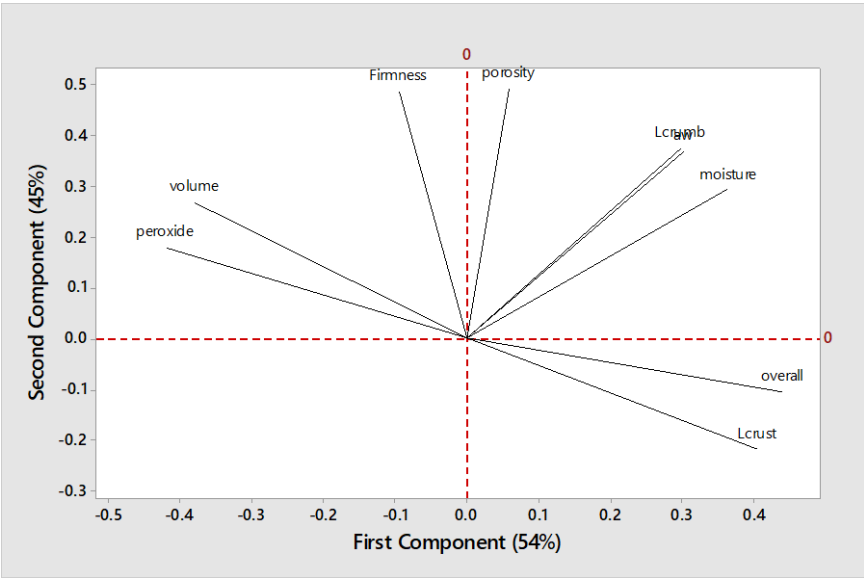

Fig. 5. The relationship between physicochemical properties in the presence of 50 ppm ascorbic acid

Figure 6 indicating the relationship between the detected doughnut's parameters in the presence of 100 ppm ascorbic acid as an antioxidant agent in product. In the present condition (presence of ascorbic acid in the product), direct relationship was detected between water activity and peroxide index of the product. The relationships between these two parameters (water activity and peroxide index) have been detected positive with porosity and firmness parameters. Regarding the effect of water activity on peroxide index, it should be mentioned that, enhancement in water activity might improve fluidity and transmission of oxidants. Moreover, positive relationship between the surface brightness and moisture content was detected. Moisture content has the most considerable effect on the product's surface. The presence of ascorbic acid in products increases the moisture content of the product with creation connections between water molecules. Retro-gradation in doughnuts' structure (like starch) is affected by moisture enhancement and as a result the surface properties are improved.

Based on the present relationship, it might be conveyed that the produced surface in the presence of 100 ppm ascorbic acid, might express higher moisture content and as a result higher brightness of the product was achieved. In this regard Purlis and Salvadori (2009) reported that the moisture maintenance ability during cooking process, might lead to the production of smooth surface, as a result of it the light reflex of the products' surface increases and the brightness of the produced product increases. Furthermore, the achieved results presented that the general acceptance is in the middle of moisture content and water activity, indicating the positive effect of these two parameters on the general acceptance of final products.

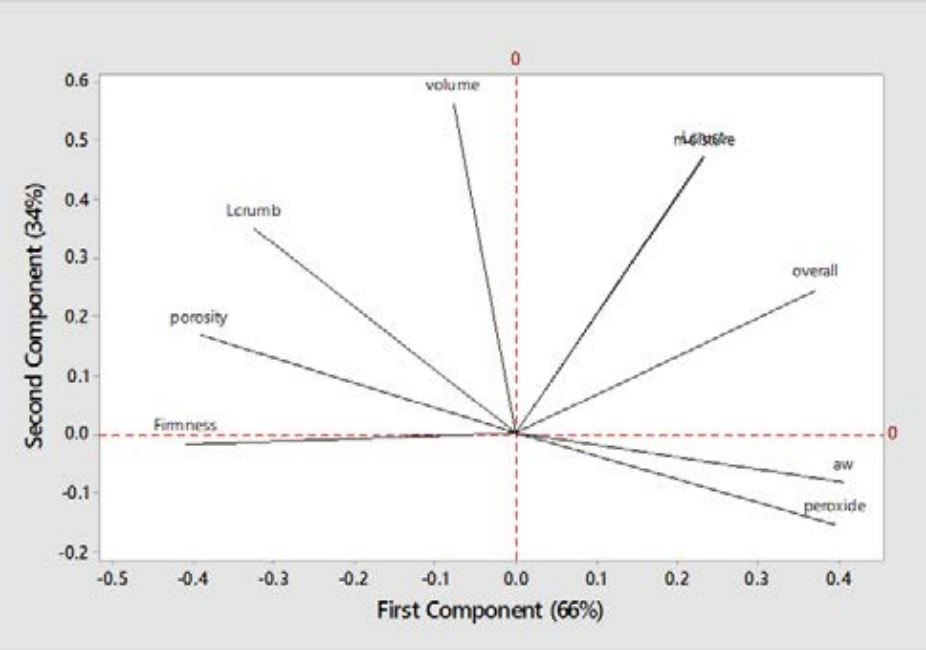

Fig. 6.The relationship between physicochemical properties in the presence of 100 ppm ascorbic acid

Figure 7 demonstrating the relationship between the selected parameters in the presence of 150 ppm ascorbic acid. Based on the observed relationships between the parameters, peroxide index in comparison to water activity is independent and in comparison to crumb' brightness has negative relationship. The negative effect of moisture content of the product on peroxide index might be justified by enhancements in the fluidity of texture and the positive effect of ascorbic acid on reduction of the produced free radicals levels and its controlling impact on oxidative activity. Furthermore reduction in oxidative activity decreased the darkness of doughnuts' crumb. On the other hands, positive relationship between the firmness and peroxide index as well as negative effects between the products' volume and peroxide index were detected.

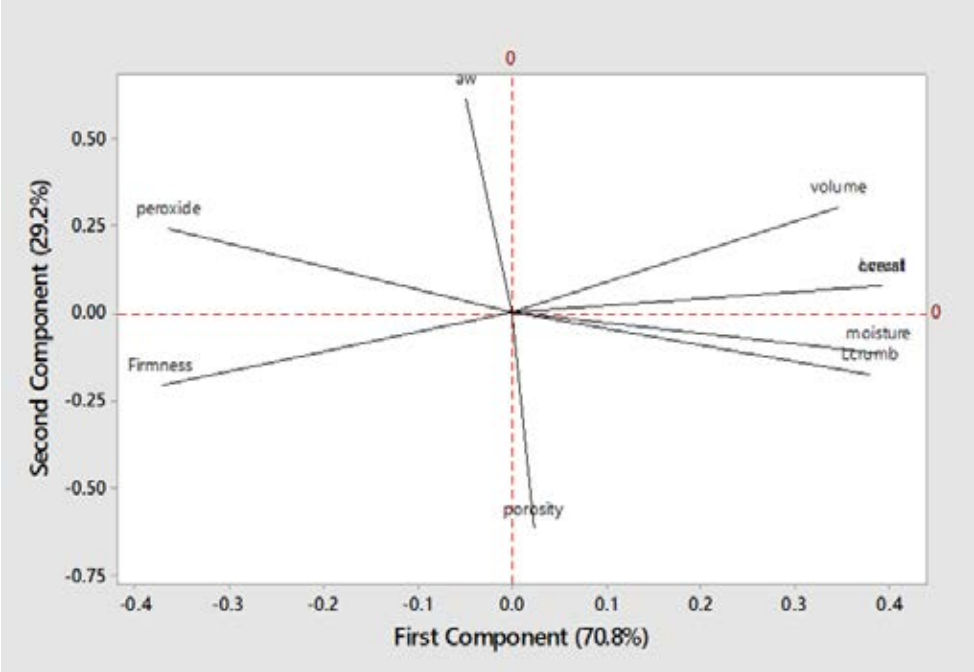

Fig. 7. The relationship between physicochemical properties in the presence of 100 ppm ascorbic acid

Analysis of the interaction between ascorbic acid and green tea extract

Enhancement in ascorbic acid concentration in fixed surface of green tea extract

In order to study the alterations between different doughnut parameters and the interactive effects of additional ascorbic acid and green tea extract in the level of 150 ppm in formulation, the level of ascorbic acid increased. Figure 8 demonstrating the relationship between qualitative and quantitative parameters of doughnut in the presence of ascorbic acid in the level of 50 ppm. Based on the achieved results as presented in figure 3 (Green tea extract) and figure 5 (ascorbic acid), it is shown that peroxide index has direct or positive relation with product's volume. While these two parameters (peroxide index and sample volume) presented negative relationship with the brightness of surface and general acceptance of the product. This phenomenon was observed when ascorbic acid in the level of 50 ppm and green tea extract in the level of 150 ppm (figure 8) was applied in the formulation of product. Furthermore once green tea extract is applied lonely or in combination with ascorbic acid in the formulation, the porosity and moisture content parameters, presented the same behaviour in the final product. Thus it might be demonstrated that when green tea extract in combination with ascorbic acid is applied, peroxide index, products' volume, brightness and general acceptance are considerably affected by ascorbic acid, and porosity value, moisture content and water activity are significantly affected by green tea extract. The achieved result also demonstrated that there is no any interactive effect between green tea extract with 150 ppm and ascorbic acid with 50 ppm levels.

Discussion

The analysis of the relationship between the quantitative and qualitative parameters in the presence of synthetic antioxidants

Peroxide index is considered as an index of the quality of the fried products, therefore antioxidants have been added in the frying oil to reduce and control this parameter of the products. The negative relationship might be due to the effect of water activity on oxidation process controlling and as a result of oxygen outflow of the products and reductions in oxidative activity. Water activity has twin effects on the progress of oxidation reaction. With enhancement in the fluidity of the product, it might transmit the created free radicals and make better penetration in the products structure (Karel., 1980); moreover it might prevent the reaction progress with creation of cross links between free radicals, as a result of it, the oxidation rate decreases. Furthermore water activity as a hydrogen donation agent, might decrease aggressive features. The obtained results presented that in the presence of synthetic antioxidants, the water activity decreases the oxidative reaction rates. Moreover peroxide index has shown positive relationship with the volume and different colour parameters of the surface as well as the colour parameters of the internal parts of the achieved products. The positive relationship of peroxide index with the volume of the product might be justified by the gluten network and as a result, its effects on the improvement of the network. On the

other hand, as a result of oxidation process in colorant agents, the brightness of the products is affected by peroxide index. The colour is considered as one of the important parameters since it attracts the customers. Many parameters might affect on the colour. The most regular reactions destroying the colorants including Carotenoids, Anthocyanins and Chlorophylls are as the following: Maylard, enzymatic browning and oxidation reactions (Suh et al., 2003). Therefore, oxidative activities might affect on the colour parameters of the obtained products. Further scientists (Ibarz et al., 1999; Lozano et al., 1997) proved and reported the similar results on the oxidation (peroxide index enhancement) and its effect on the brightness created by colorants reduction. Also the obtained results demonstrated that, the general acceptance has the positive relations with the firmness of the product. In other words, the evaluated sensory properties were affected by the products' texture properties.

The analysis of the relationship among qualitative and quantitative properties of the products with the addition of green tea extract

Moisture increases the volume of the samples with affecting on the inflation of the starch molecules. The Amylose and Amylopectin might create polymer that can make the achieved products' structure stronger. Therefore enhancements in the firmness of the products' structure might prevent of the outflow of the produced gas by yeasts. It should be noticed that, the ultra enhancement in the firmness (polymerized and crystallized Amylose-Amylopectin) of the product might not be acceptable for customers. Zolfaghari et al. 2013 reported that, frying due to creating thick surface of doughnut and Slight shrinkage might prevent of the reduction of products' volume. Moisture content might with emitting out of environmental oxygen as well as alterations in reactions from oxidative deterioration to lipolysis could affect negatively on peroxide index. Brightness parameters of the crust and crumb of doughnut, expressed positive relations with each other. Moreover the general acceptance presented negative relation with water activity. In other words, the addition of 100 ppm green tea extract in doughnut formulation reduced the general acceptance of the product with negative effect on water activity. The cause of this phenomenon most likely might be due to the effect of water activity on enzymatic browning reactions and as a result, it affects on the colour parameters of the products' surface.

While the standard sample presented independent behaviour through alterations between the firmness and peroxide parameters. The cause of this behaviour of addition of green tea infusion in samples, might be justified by the oxidative activity of oil and its effects on retro gradation rate and the connections between Amylose-Amylopectin molecules in starch granules. Moreover the alterations between peroxide index with brightness parameter and volume showed considerable correlation. Tsong et al. (2010) and Dogan et al. (2005) reported that colour alterations during cooking process have affected by oxidation and as a result it affects on the pigments of green tea and polyphenols. On the other hand, further parameters including surface brightness and water activity presented positive alterations with each other. These alterations with sample's volume are negative. Furthermore the general acceptance presented independent relations with other detected parameters in the present study. In other words the effects of parameters in the level of 150 ppm infusion presented no considerable effects on general acceptance.

The negative effect of moisture content of doughnut with the brightness parameters (In the presence of 200 ppm green tea extract) might be justified by polyphenol oxidase enzyme presence in green tea extract and the moisture content of the product (Takeo., 1966). The polyphenol oxidase enzyme activity might increase with a reduction in moisture content and as a result of it the brightness decreases.

Analysis of the relationship between the qualitative and quantitative parameters of the product with the addition of ascorbic acid

With creation of secondary compounds and their contact with the environmental oxygen in the surface of the product (doughnut), the darkness of the product's surface increases. On the other hand the detected relationship between the peroxide index and general acceptance of the product, presenting the lowest desirability. These alterations are due to the acyl groups of non saturated triglycerides and further ingredients of non saturated oil that might create undesirable effects on sensory properties of the products such as odour and taste (Choe and Mın., 2006). Regarding the relationship between the peroxide index and alterations in samples' volume, direct and positive relationship was recorded. These alterations are relevant to oxidative activity on gluten network and as a result an enhancement in the resistance of the created network through cooking process. The same relation was observed in standards in the presence of synthetic antioxidants. The firmness of samples expressed positive relations with the porosity value. An increased porosity in samples, is relevant to creation of improved structure of gluten and as a result, its capability in maintenance of the released Co_2 by yeasts. Therefore creation of networks with high resistance might lead to an enhanced firmness of the products. Ascorbic acid as one of the oxidants is used extensively in bakery industry. This additive with making disulfide connections might increase gluten resistance. Therefore due to this phenomenon, the retentively of the produced gas in cells and as a result the

volume of the product increases (Yamada and Perston., 1992). Moreover Valentina and Bulter (2007) reported the similar result and proved the considerable effect of ascorbic acid on the improvement of gluten network and texture of the products. The direct relationship was also detected between the water activity of doughnut's crumb and brightness. This phenomenon might be justified by the fluidity in product's texture and as a result its improvement on oxidation process and brightness in samples (Karel., 1980).

Moisture content has the most considerable effect on the product's surface. The presence of ascorbic acid in products increases the moisture content of the product with creation connections between water molecules. Retro-gradation in doughnuts' structure (like starch) is affected by moisture enhancement and as a result the surface properties are improved. Based on the present relationship, it might be conveyed that the produced surface in the presence of 100 ppm ascorbic acid, might express higher moisture content and as a result higher brightness of the product was achieved. In this regard Purlis and Salvadori (2009) reported that the moisture maintenance ability during cooking process, might lead to the production of smooth surface, as a result of it the light reflex of the products' surface increases and the brightness of the produced product increases. Furthermore, the achieved results presented that the general acceptance is in the middle of moisture content and water activity, indicating the positive effect of these two parameters on the general acceptance of final products.

The negative relationship between the firmness and samples' volume might be justified by reductions in Amylose-Amylopectin connection leading to reductions in firmness and enhancements in volume. Valentina and butler (2007) and El-Hady and El-Samahy (1999), presented that once ascorbic acid in the concentration ranged 100-200 ppm is used in bakery industry, the volume of the product increases and as a result of it, the firmness of the product decreases. The same researchers reported volume reduction and firmness enhancement of the product once ascorbic acid in the level of 200 ppm was applied in the formulation.

General acceptance showed positive relationship with the brightness of surface and crumb as well as the volume and moisture contents of the products. Ascorbic acid in the level of 100 ppm increased general acceptance with affecting on oxidative parameters, colour and volume of the products and enhancement in water maintenance capacity of the product. Moreover presenting negative relationship between water activity and porosity of the product was observed. In cereal based products, the porosity depends on water activity of products and as a result with enhancement in water activity, the porosity decreases (Guıllard et al., 2003). This phenomenon might be due to the addition of ascorbic acid in formulation of doughnut of which an enhancement in water absorbance, leads to inflation in product's structure and as a result of it the porosity decreases.

Conclusion

Principal Component Analysis (PCA) approach expresses the alteration rate between different parameters. In the present research the relationship between different physicochemical and sensory properties of doughnut with the use of Principal Component Analysis (PCA) has been studied. The determination of the applied alterations in samples based on the changes in the applied antioxidants and their levels has made, their effects on the products and as a result their controlling efficacy on the alterations in a desirable direction, understandable for customers and scientists. The achieved outcomes demonstrated that the created alterations as a result of added green tea extract and ascorbic acid in different levels individually or combined in the formulation, affected considerably on peroxide index that this phenomenon might affect on other parameters.

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Application of Histological Methods for Recognition of Illegal Tissues in the Meat Products

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Abstract

Meat and meat products are of particular importance in the diet as a rich source of proteins, and on the other hand, Islamic Sharia emphasizes the consumption of halal meat that has been prepared in the correct way in order to preserve the health of the body and soul. Unfortunately, some producers of meat products produce products that contain undesirable and illegal tissues. The presence of illegal tissues in meat products is considered a serious threat to consumer health. Due to the fact that microbiological and chemical methods alone are not able to control the quality and determine the adulteration of illegal animal tissues in meat products, therefore, it is particularly important to use of histological methods for this purpose. In this article, the use of histological methods for recognition of illegal tissues in the country's meat products has been discussed.

Key words: Halal, Histology, Illegal tissue, Meat product, Nutrition.

A Review on Application of Date in Beverage Products

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Abstract:

Nutrition is one of the necessities of human life. From the point of view of Islam, in addition to paying attention to the health of the appearance of the food, its inner aspects should also be specially considered. Today, the concept of halal and tayyeb is beyond a religious value and it shows the health and quality of the consumed food, therefore, non-Muslim consumers are one of the target groups of the tayyab food industry along with Muslims. Tayyab food and drink is more than halal food, which includes all nutritional and spiritual aspects and includes high nutritional value, no harmful effects, healthy and hygienic and compatible with body structure. Sucrose is the most common sweetener in the beverage industry but due to the desire of consumer to use healthy and nutritious drinks, date products can be substituted for sugar in this industry. Dates have a special importance in the diet of Muslims. Iran is the second largest producer of dates in the world, but a small amount is used in processing industries. Due to the richness of dates in nutritious and health-giving compounds such as minerals, vitamins, antimutagenic compounds and dietary fibers, replacing sugar with date products in the formulation of Halal and tayyab drinks improves the nutritional quality of these products and is also important from an economic point of view. In this study, while expressing the therapeutic effects of dates from the perspective of traditional medicine, some date products and their applications in the production of functional drinks have been introduced.

Keywords: Beverage, Date, Date liquid sugar, Date syrup, Sugar replacement

Investigating the effect of ultrasound on the activity of enzymes to reduce waste in the food industry

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Abstract

Ultrasound is a technique that has been considered as a new technology for use in various industries. One of the important effects of ultrasound on the enzyme is the creation of holes or cavitation effect in the enzyme. Although sonication is used for enzyme inactivation, it has recently been found that using this gentle method cannot inactivate all enzymes. Research has shown that the use of ultrasound treatment at appropriate frequencies and intensities can increase enzyme activity (without changing its structure) through the favorable changes it creates in protein molecules. This review article presents the effect of ultrasound parameters (intensity, number of cycles and frequency) on the catalytic activity of different enzymes under ultrasound treatment.

Keywords: Ultrasound, Enzyme, Thermodynamics, Structural Composition, Catalytic Performance

Identification of different methods of authenticating natural and industrial lemon juice of different countries

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Abstract

Consumer demand for fresh foods with desirable sensory properties. The lack of easy, cheap and non-destructive methods to control the quality of fruit juices is one of the main challenges in the beverage industry. Today, one of the main problems in the production and consumption market of lemon juice in the country is identifying counterfeits in this product. Studies show that the factors provided by Iran's Standard Organization cannot identify all frauds in lemon juice because mistakes may occur in conducting these tests. There are methods for fraud such as adding lemon essence, citric acid or extract Lemon juice is lemon juice diluted with water. But in Iran, frauds are done in different ways that endanger the health of people in the society. In this research, the advantages and disadvantages of the proposed methods presented in different countries to determine the differences in natural and industrial lemon juice are determined in order to select the most appropriate methods to identify counterfeits.

Key words: lemon juice, standard, fraud, authenticity, identification factors

Recycled Materials from Food Waste and Their Application in the Food Industry

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Abstract

Due to the high capacity of food industry factories, many wastes are produced. If these wastes are not properly managed, in addition to food waste, they will lead to environmental problems such as global warming, soil erosion, water pollution, and the release of greenhouse gases, and from an economic point of view, the loss of resources such as energy and water. Therefore, the issue of food waste has become one of the main concerns around the world. The following article is a review of various reproducible materials such as bioactive compounds from the waste of food factories and their reuse. Converting these wastes into biological products with high added value and reusing them in the food industry can be considered as a suitable solution to reduce these wastes.

Keywords: Food waste, Bioactive compounds, Environmental pollution

The Role of Irradiation in Food Preservation and Quality

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Abstract

Nowadays, due to the increase in population and the essential need for healthy food, it is essential to identify food storage methods in order to improve microbial health, maintain organoleptic quality and increase the shelf life of food. In this regard, the use of precise and high-performance technologies has been considered. Among the different methods, food irradiation technology is a kind of cold process for making food healthy and increases the shelf life and delays their spoilage. In the upcoming article, emphasizing the importance of food irradiation, the effect of radiation on a group of irradiated foods and the results of irradiation of these foods are stated.

Keywords: Irradiation, Radiation, Quality, Durability, Food

Plant based meat alternatives: advantages and challenges

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Abstract

Meat substitutes are usually non-animal proteins with chemical characteristics very similar to animal proteins, and various formulations have been tried to increase their overall acceptance in terms of texture, taste and appearance. Meat substitutes and non-animal proteins are comparable to meat in terms of chemical and sensory characteristics. The global increase in meat consumption leads to destructive environmental effects such as increasing greenhouse gas emissions and as a result of global warming and excessive use of land and water. In recent years, the popularity of various types of meat substitutes have increased exponentially, and currently, the global market of meat substitutes is not only for vegetarians. But due to the health-giving and environment-friendly benefits, these products are also associated with challenges, such as changing the intestinal microflora and even producing greenhouse gas. In this article, we discuss the benefits and nutritional value of plant-based alternatives and the challenges associated with it.

Keywords: meat alternative, plant based, eco-friendly, gut-microbiota

The role of microorganisms in the production of Tayyib food products

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Abstract

Tayyib is one of the most prominent characteristics of food, which has been emphasized many times in the holy Quran. Based on holy Quran and Hadiths, the Tayyib foods are based on 5 principles, which include being halal, being healthy, being authentic, being attractive, and being blessed. On the other hand, microorganisms are very effective in the chain of production to consumption of food products; so that they can cause the production of halal, healthy, tasty and health-giving foods, or they can cause food spoilage and contamination; Therefore, according to the effectiveness of microorganisms in the criteria of Tayyib foods, these organisms play an important role in the production of a Tayyib food product or the exit of a food product from the circle of being Tayyib. In this article, the role of microorganisms in each of the criteria of Tayyib food has been discussed separately.

Keywords: “Tayyib” “Microorganisms” “Food Products”.

The effects of medicinal plants in the prevention of ovarian cancer in the laying hens

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Abstract

Cancer is the second leading cause of death worldwide after cardiovascular disease. Here are many forms of ovarian cancer, the most common of which is ovarian epithelial cancer (EOC), which is a deadly disease with a prevalence of more than 90%. The development of an animal model for OC prevention research is a significant step forward that allows for quick evaluation of various factors. The layer hen's most notable characteristic is its high rate of spontaneous ovarian cancer. The laying hen is exceptional among animals in that it does not require either experimental induction or genetic modification to grow ovarian tumors. During the ovulation process, inflammatory mediators can damage the DNA of ovarian surface epithelium cells. EOC may be reduced using cancer chemoprevention techniques involving natural substances. The objective of this study is to investigate the use of medicinal plants for the prevention and control of ovarian cancer in hen is that it is hoped that the relevant medicinal plants can be used for the prevention, control and treatment of ovarian cancer in women.

Keywords: Anti-inflammation, Chemoprevention, Laying hens, Medicinal plants, Ovarian cancer.

Identification of adulteration in saffron using sensor-based methods: review article

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Abstract:

Saffron is the commercial name of the dried flower stigmas of Crocus sativus L., which is sometimes fraud in the local market due to its high price. Saffron (Crocus Sativus L.) has a long history of therapeutic and medicinal uses in different worlds. Saffron has a high market value with ever-increasing demand, but due to the need for special agricultural and climatic conditions for the growth of saffron, its production areas are limited. Therefore, fraudulent practices are used by many traders to assess the market demands and also to get more. Various methods are used to adulterate in saffron, such as cheap and available common plants, the less important parts of the saffron plant, minerals, artificial colors, weight factors, animal materials and the use of natural materials. In the contemporary scenario of global trade, the authentication of saffron quality can be conducted with modern tools and techniques and determining the quality of counterfeits. In this review, a brief overview of various adulterations, including plant and chemical origin, is presented, along with a discussion of sensor-based techniques to determine adulteration in saffron in various cases. Adulteration with additional ingredients not only reduces the quality of saffron, but may also lead to severe health complications in the public. Different characterization techniques are limited in their detection and suitability for detecting a specific type of counterfeit (natural or synthetic). Among these methods, the sensor methods are the most sensitive methods for checking adulteration in saffron.

Keywords: Identification, Adulterations, Saffron, Sensor

Effect Of Drying Mechanism In Order To Maintain Product Quality (Case Study Of Saffron)

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Abstract

The drying process has been a common method to increase the shelf Life extension of foodstuffs since tens of centuries ago.Drying means removing moisture from foodstuffs. Doing this process prevents the growth of bacteria, yeasts and molds, But it has adverse effects such as reducing vitamin B, C, etc. In the process of drying a foodstuff, important factors such as environmental weather conditions and the characteristics of the foodstuff are influential. The saffron (Crocus sativus) is very valuable plant in the food chain to such an extent that the Iran National Standards Organization (INSO) compiled a appropriate framework for drying saffron in 1373 A.S. Choosing the appropriate method for drying saffron is very important, Because the chosen method has an effect on preserving the taste, color and smell of saffron. If the correct method is not chosen in performing this operation, saffron may become wrinkled, which is not desirable and it will not be pleasing to the consumer in terms of appearance.

Keywords: Saffron, quality of saffron, drying, drying saffron.

Investigation Of Different Types Of Saffron Dryers In Order To Produce High-Quality Products

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Abstract

Saffron is one of the most valuable agricultural products, which is known as red gold all over the world. Considering the necessity of drying saffron in order to increase its life and durability, the most appropriate methods of drying this strategic product should be used because the final quality of this product depends on the method of drying saffron and it affects the export rate of this product. According to various researches and findings, the traditional drying method (which has been popular in old Iran for a long time) is time consuming and the quality of saffron is not suitable at all, and it is suggested to use modern methods and devices in drying saffron. According to the tests carried out on the process of drying saffron in different method, the use of microwave and solar dryers are the most appropriate methods in the world in terms of the quality of the product and the reduction of the drying time of saffron.

Keywords: Saffron, quality of saffron, drying of saffron, microwave dryer, solar dryer.

Effect of Fennel and Ginger Essences on Sensory Characteristics and Shelf Life of Cow Milk

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Abstract

Essential oils and herbal extracts from medicinal plants as a source of natural antioxidants, antimicrobial, anticancer and biologically active compounds have attracted a great deal of interesting applications in fresh and processed food preservation, pharmaceuticals, alternative medicine and natural-based therapies. In this study the effect of various concentrations (0, 100, 250, 500 and 1000 ppm) of fennel and ginger essence on microbial, chemical, sensory characteristics and shelf life of pasteurized milk during storage at refrigerator condition was studied. Results showed that here was the highest storage life in 500 and 1000 ppm ginger treatment (16 day) and the lowest storage life in control treatment (4 day). As the storage progressed a general decreasing trend in the pH content was observed. In various levels of ginger essence pH during storage time was increased. The results revealed that by use of various concentrations of essences, the total count and coliform bacteria was decreased but these essences had no effect on Psychrotrophic bacteria count. Sensory properties such as odor and flavour were affected by various concentrations of essences. Samples with 100 and 250 ppm ginger essence treatments had higher flavour and taste scores than others. The highest odor scores were related to 100, 250 and 500 ppm ginger essence. Samples with 1000 ppm fennel essence had the lowest odor score. In general, low concentrations of ginger essence due to acceptance of the organoleptic characteristics from the consumer view as well as reduce microbial growth and increase storage time was recommended.

Keywords: Milk, Essence, Fennel, , Ginger, Sensory properties

Effect of Caraway and Cardamom Essential Oils on Physicochemical, Sensory and Microbial Characteristics of Milk

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Abstract

Essential oils and herbal extracts from medicinal plants as a source of natural antioxidants, antimicrobial, anticancer and biologically active compounds have attracted a great deal of interesting applications in fresh and processed food preservation, pharmaceuticals, alternative medicine and natural-based therapies. The aim of this study was to investigate the effect of different concentrations (0, 100, 250, 500 and 1000 ppm) of caraway and cardamom essential oils on the microbial, sensory characteristics and shelf life of pasteurized milk during storage in the refrigerator. The results showed that the highest shelf life was observed in the treatment containing 1000 ppm cardamom essential oil (14 days) and the lowest shelf life was observed in the control (4 days). The use of different concentrations of essential oils reduced the total bacterial count and coliforms compared to the control. Treatments containing 100, 250 and 500 ppm cardamom essential oil received the highest score in terms of flavour. The highest odor scores were related to all levels of cardamom essential oil. Samples containing 1000 ppm caraway essential oil received a lower score in terms of smell. In general, higher levels of cardamom essential oil are recommended both due to the acceptance of sensory characteristics from the point of view of consumers and due to the reduction of bacterial growth and the increase of storage time.

Key words: Milk, Essential oil, Caraway, Cardamom, Shelf life

Effect of foam-mat drying and microwaves on some physical properties of beetroot powder

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Abstract

The aim of this study was to investigate the effect of maltodextrin concentration (0, 5 and 10%) and milk protein concentrate (MPC) (0, 5 and 10%) on foam density and some physical characteristics of beetroot pulp powder produced by foam-met drying method. Was. To prepare foam, maltodextrin and milk protein concentrate were added to beet pulp and stirred for a specific time and speed. The prepared foams were spread on a glass container and then dried in a microwave system with powers of 400, 600 and 800 W. The results showed that the highest amount of foam density is related to the power of 400 microwaves and without maltodextrin and milk protein concentrate (1.366 g/cm3) and the lowest amount is related to the powers of 600 and 800 with 5% maltodextrin and 5% MPC.. None of the studied treatments showed a significant effect on powder hygroscopicity. In the evaluation of color factors, it was found that the effect of the studied treatments on L*, b* and BI factors was significant, but ΔE and a* parameters were not significantly affected by these treatments.

Key words: foam- mat drying method, beetroot, microwave, color indexes

Gelatin in the halal food industry: detection methods of pig gelatin and introduction of suitable alternatives

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Abstract

Gelatin has various applications in various industries, especially food, pharmaceutical and cosmetic industries due to its unique functional properties. However, it is one of the most challenging ingredients in the Halal food industry. Considering that 46% of the gelatin produced in the world is extracted from pork, so one of the main goals of the food industry in Muslim countries is to identify gelatin of non-halal origin. For this purpose, various chemical, biochemical, chromatography, etc. methods have been investigated. The HPLC method may result in the wrong conclusions because of disability to distinguish between pig and cow gelatin. Also, SDS-PAGE method due to the lack of separation of peptides with low molecular weight and accurate detection of molecular weights is not recommended. Among the methods used, DNA-based methods are preferable to protein-based methods that undergo denaturation due to their high resistance to heat. One of the ways to solve the problem of gelatin in the halal food industry is to replace mammalian gelatin with fish gelatin. Fish gelatin has lower thermal stability and weaker gelling and rheological properties, these properties can be modified with compounds such as pectin with low methoxyl and sodium alginate. Therefore, considering the wide use of gelatin in food formulations and the importance of the origin of gelatin, the development of quick detection methods of the origin of gelatin and the use of suitable alternatives are of great importance.

Keywords: gelatin, pig; Halal, detection methods, fish

The role of organic and Tayyeb products on health-oriented lifestyle

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Abstract

Proper nutrition is essential for a healthy lifestyle. Indiscriminate use of fertilizers and pesticide chemical and the remaining of these compounds in agricultural products has caused the decrease to food healthy and society health indices. Therefore, the basic strategies of agricultural development are, in the first step, to increase the health level of the society by giving priority to the production of healthy products, and in the next step, the production of organic or Tayyeb foods. Consuming organic and Tayyeb foods helps to create a healthy lifestyle and improve the quality of life in society. Since organic foods are more environmentally friendly and healthier than conventional foods, the demand for buying and consuming organic products is increasing, and this leads to the development of a health-oriented lifestyle in society. This article also deals with the relationship between health-oriented lifestyle and consumption of organic and Tayyeb products.

Keywords: Organic, Tayyeb, Healthy food, Community health, life style.

Production of egg-free cake using Chubak root extract and various hydrocolloids

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Abstract

Cake is one of the most popular cereal products, but in recent years, due to the increase in the price of raw materials, the price of this product has increased significantly. Among the ingredients used in cake formulation, eggs have the highest price. In addition, eggs have high cholesterol, are the source of microbial contamination and cause allergies in some people. Therefore, finding a suitable substitute for eggs in cake production is very important. Chubak plant has high foaming power and foam stability, but due to the lack of gel formation power, it cannot replace eggs alone. Hydrocolloids are high molecular weight polymers with unique functional properties that can improve the texture of eggless cakes. Therefore, in this project, egg was replaced with chubak root extract and different hydrocolloids (guar, carrageenan and xanthan) and the physicochemical properties of dough and cake were determined. The results showed that the eggless cake containing guar gum had the best physicochemical characteristics and the most similarity to the control sample. By using this hydrocolloid, it is possible to produce eggless cakes with high nutritional value and acceptable sensory attributes.

Keywords: Eggless cake, Hydrocolloids, Chubak

Isolation of lactic acid bacteria from kashk and their screening based on probiotic characteristics

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Abstract

In this research, the probiotic potential of lactic acid bacteria isolated from two kashk samples from Fars (Abadeh city) and Khorasan Razavi (Klat region) provinces has been investigated. MRS and M17 cultures were used to isolate lactic acid bacteria from local kashk. Then, identification of isolated bacteria was done based on morphological, physiological and biochemical characteristics, and PCR was used for molecular identification of lactic acid bacteria isolates. To investigate the probiotic properties of the isolates, cell viability in simulated conditions of the stomach and intestine, resistance to bile salts, resistance to antibiotics, antimicrobial properties, hydrophobicity and cell adhesion were evaluated. The results showed that the isolates were Enterococcus faecium KKP. 3772, Enterococcus faecium C1, Pediococcus pentozaceusH1.1 (KF3), Lactococcus lactis Rsg, Enterococcus faecalis P190052, Enterococcus mandeti CECT972T, Pediococcus pentozaceus VNK-1 and Lactobacillus plantarum PM411. Enterococcus mandeti CECT972T and Enterococcus faecium EU428011 were the most sensitive and Pediococcus pentozaceus VNK-1 and Pediococcus pentozaceus H1.1 were the most resistant isolates to bile salts. The isolates were resistant to tetracycline and sensitive to chloramphenicol and gentamicin. The highest and lowest surface hydrophobicity and self-aggregation were observed in Pediococcus pentozaceus VNK-1 (KK4) and Enterococcus manditiCECT972T.

Keywords: Kashk, Lactic Acid Baceria, Probiotic

Development of method for the analysis of ethanol amounts in food and beverages using GC-FID

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Abstract

In this research, an in-house method, employing magnetic stirring-assisted aqueous extraction combined with gas chromatography-flame ionization detector, for quantitative determination of ethanol in different foods and beverages was introduced. Validation parameters, including selectivity, method limits of detection (0.006 mg/g) and quantification (0.02 mg/g), linearity (R_2 of >0.999), trueness (relative biases of < 3 %), accuracy (recoveries of 97–102 %), and precision (relative standard deviations of < 5%), were satisfactory. The proposed method was as accurate and precise as and more sensitive than the AOAC method 2016.12. The validated method was successfully used to quantify ethanol in 50 commercially processed food and beverage samples and can be used for halal verification. Accordingly, this study provided a reliable method for routine quantitative analysis of ethanol in processed foods and beverages to ensure their halal integrity prior to halal certification.

Keywords: Analysis, Ethanol, Halal, Gas Chromatography

Chemical fertilizers and healthy food

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Abstract

The most important plant nutrition to increase of crop yield is the application of chemical fertilizers. Farmers believe that increasing the use of chemical fertilizers will increase the yield. Therefore, if there is no ethical management of chemical fertilizers and indiscriminate consumption and more than necessary and higher than the permitted standards of pollution. In spite of the slight increase in product yield, in terms of quality, it will definitely cause serious consequences and risks for human health, livestock and the environment. To reduce the harmful and adverse effects of chemical fertilizers, In addition to encouraging and increasing the knowledge of farmers regarding organic products with a higher selling price and control of hidden losses, destructive and deadly high consumption of chemical fertilizers, it provided special facilities for access to non-chemical fertilizers such as organic fertilizers, biological fertilizers and nano fertilizers. Therefore, it is necessary to increase the quantity and quality of crops without harmful effects, ensuring the food security of the world by informing the farmer, and explaining the valuable position of the farmer to ensure the health of the ecosystem and community members, create a healthy and ethical ecosystem.

Keywords: Agricultural ethics, chemical fertilizer, healthy food

A review of the health-promoting effects of red cabbage anthocyanins

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Abstract

Today, red cabbage anthocyanins have received much attention due to their health-giving effects. Red cabbage anthocyanins are mainly non-acylated or acylated cyanidin-3-diglucoside-5-glucoside derivatives with P-coumaric, sinapic and ferulic acid aromatic acids. The activity of various phytochemicals, including vitamins C and E, carotenoids, phenolic compounds and glucosinolates have an effect on the health-giving effects of brassica plants. Among the health-giving effects, we can mention antioxidant activity, which is influenced by the type of acylation in acylated anthocyanins. Acylation with sinapic acid produces the highest amount of antioxidant activity. The activities of hepatoprotective, cardioprotective, hypocholesterolemic, and nephroprotective are other health-giving effects of red cabbage anthocyanins. The aim of this study is to investigate the health-giving effects of red cabbage anthocyanins.

Keywords: anthocyanin, cyanidin-3-diglucoside-5-glucoside, antioxidant activity

A4- Fiqh and Sharieh

Halal and Tayyeb food in the traditions of the infallible imams (peace be upon them)

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Abstract

Introduction: food safety and quality control ensure the preservation of desirable characteristics of food in the stages of production, transportation, processing, packaging and distribution, which leads to promoting healthy diets, reducing economic waste and encouraging trade in the region. It becomes international food. A healthy person is the axis of development and food is the most important factor in the health of people, therefore, since the beginning of civilized societies, the rulers paid a lot of attention to the health of food. No other religion has paid as much attention to nutrition as Islam. According to the Qur'an and hadiths, food is halal and Tayyeb when it is clean and pure and free of contamination from all material and spiritual aspects. The purpose of this study is to investigate the uses of the words "Tayyeb" and "halal" in the visions of the infallible imams, peace be upon them, and in relation to food and nutrition.
Materials and methods: In this study, two narratives related to Tayyeb were extracted and analyzed using Noor al-Anwar software.
Findings and Conclusions: Examining the narrations of the Imams of the Infallible Imams, peace be upon them, shows that the word Tayyab is used in various contexts, such as Tayyeb meeting, Tayyeb behavior, Tayyeb mood, Tayyeb smell, pure generation, Tayyeb position, the direct path, Tayyeb life, Tayyeb reputation and purity of the original have been used. In the field of food, nutrition and foodis including such as wheat, figs, rutab, birds, etc. as Tayyeb food, the need to travel to get Tayyeb food, buying and selling Tayyeb food, a Tayyeb person as the owner of Tayyeb food. Tayyab food as a Zakat paid food and the reason for offering prayers was mentioned. It is also stated in the hadiths: Don't give up asking for halal sustenance, because halal sustenance will help you in your religiousness.

Keywards: Tayyeb, halal, hadiths, infallible imams, food

Relationship between halal and tayyeb in date production

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Abstract

Introduction: Dates are one of the important agricultural items of Iran, which are highly sought after by producers and consumers both inside and outside the country due to the presence of nutrients and rich in energy. Since halal food is emerging as one of the most important topics in the food industry today, a logical understanding of halal, tayyab and their relationship with food safety is essential in determining the status of halal food. There are many factors involved in the food supply chain from the farm to the table and they can have an effect on the quality of the food, therefore, in this research, an attempt has been made to investigate the relationship between examples of quality and Tayyeb product in the date supply chain as a case study.

Methodology: In this study, first, all the basic points and principles related to the solution in national and international standards, as well as the safety and quality requirements of the date product in all stages of its production chain, from the grove to the consumer, were determined and categorized. Also the relevance of each case and its role was evaluated based on the determined indicators of positive concepts.

Findings and conclusions: being halal is a fundamental and main part of Tayyeb and if this principle is not established, being Tayyeb of that matter is questioned. Therefore, in order to use dates as a food item, not only its halal is a necessity, but being halal of many factors such as tools, land, facilities and effective processes in the chain of production to consumption must also be proven so that it can be called Tayyab product. Therefore, these two concepts together guarantee the implementation of food safety and quality requirements.

Keywords: Quality, supply chain, Halal, Tayyeb, dates.

Explanation of the main components of the food chain in the view of Islam

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Absrat

Introduction: The God has placed various capacities in food products (providing the necessary energy for the body's movement and activity, growth, preventive constructive effects, healing the body and mind), food is a living Creature and and soul. It is digestible in the field of human body and it is human-building. For this reason, God has ordered humans to choose the highest level of quality (both material and spiritual) for their food. Therefore, the religion of Islam has established customs and regulations for the production chain to the consumption of food products in order to achieve the highest level of control and quality assurance in the food chain.

Research method: In this research, in order to investigate the attitude of Islam towards the food chain, the view of religion towards the stages of production, processing, packaging, distribution and consumption of food was analyzed from the perspective of verses and hadiths, and the main components and approaches in Islam's attitude towards the food chain was extracted and the paradigm taken from Islam's view in the field of food (Islamic food theory) was explained as a scientific capital for the re-engineering of food standards and the re-engineering of processes in the chain of production to consumption of food.

Findings and conclusions: For the optimal use of food products, it is necessary to compile a set of guidelines that affect the preservation and improvement of its quality in the form of a process standard (from production to consumption) and be established as an all-round requirement throughout the food chain (technical and engineering, legal and cultural). This process standard regulates all factors affecting the quality of the food product (material and spiritual) in such a way that its quality is maintained at the highest possible level and its constructive effects are transferred to the consumer. For food products, the solution that is suggested to realize the optimal use of food is to formulate a process standard for Tayyeb food and establish it along the chain of production to consumption. This will cause the greatest care to be taken during the food processes in order to maintain its natural quality and originality and to provide the possibility of using the superior properties of food products for humans.

Key words: Islamic attitude, strategic value, nutrition process, food chain, Tayyeb food

Explanation of Tayyab evaluation model: logic, criteria and foundations

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Abstract:

Introduction: The scope covered by Tayyeb embleem is very wide and comprehensive; which is includes all products (goods and services), SMBs and organizations. For this reason, it should have a clear and specific structure and model in dealing with the subjects it covers. The evaluation model of Tayyeb has been formed according to the indicators in the Tayyeb conceptual model, which includes originality, health, being halal, attractiveness, beauty, and blessing.
Materials and methods: This research is a qualitative study of an analytical type, focusing on verses 24 and 25 of Surah Ibrahim, to extract a structure for modeling in the field of Tayyeb emblem based on religious sources and verses of the Quran.
Findings: The investigations show that the most comprehensive and high-quality model of quality assessment and ranking can be compiled and designed based on the components and criteria, indicators and metrics of Tayyeb emblem; This model, in addition to being a comprehensive and process model, can act as a system coordinating experimental knowledge and technology with revealed principles due to its coordination with monotheistic principles of life. In this model, evaluation is done from three viewpoints: specialized, general (customers) and self-evaluation with different weight coefficients, and finally the quality score of the desired product is calculated based on the results of these three evaluations and recorded in the Tayyab quality system. Based on this, all the stakeholders of the Tayyab ecosystem can see the evaluation results and the quality scores related to different products, both in general and separately by the five principles of Tayyab quality system.

Keywords: Tayyeb Emblem, evaluation model, index, quality

Jurisprudential rules regarding the production and consumption of clean food

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Abstract

Knowledge of jurisprudence, as a divine program for all parts of human life, considers one of its missions to explain the principles for chastity, which are discussed in the book of hunting and slaughter. In addition to affecting the human body, food also affects the soul, and therefore man must be careful about his food. The main question in the research is what are the jurisprudential rules regarding the production and consumption of clean food and what do the scope of these rules cover? By referring to reliable Islamic sources, collecting the rules of jurisprudence in the form of receipts and using the descriptive-analytical method, the findings indicate that among the rules of jurisprudence, the two rules of non-purification and fetal zakat specifically address the issue of producing clean food. Of course, common rules such as harmlessness, purity, promptness and proclamation can also provide strategies for the production and consumption of clean food in order to build a clean eating society.

Keywords: Food, rules of jurisprudence, Adami Tazkia, Lazarar, Taharat

Preparation of gelatin from fish skin with the help of microbial enzymes in the fermentation process

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Abstract

Gelatin is widely used in the food and pharmaceutical industries and mammalian gelatins such as pigs and cows are used for this purpose, but due to health and religious issues of this gelatin, today gelatin extracted from fish skin and bones is used as an alternative. Gelatin is a high molecular weight protein obtained from the hydrolysis of collagen by acidic, alkaline and enzymatic methods. The enzymatic method has been considered due to its compatibility with the environment, reduction of solvent and water use and efficiency. The fermentation process is a method for hydrolyzing proteins. During the fermentation process, bioactive peptides are released by the action of endogenous microorganisms and proteolytic enzymes, so this process can be used to loosen collagen molecular bonds and optimize gelatin production.

Keywords: Gelatin, fish waste, enzyme

The basics of "halal and good" nutrition from the perspective of the Holy Quran

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Abstract

Introduction: "Halal and good" nutrition is the concept of using food that, by having the two elements of desirability and cleanliness, while enjoying it for the senses and the soul, provides an opening for human access to a good life. The origin of this term should be sought in the verse " “O people, eat of what is on the earth that is lawful and good.” from the Holy Qur'an. The purpose of this article is to explain the basics of "halal and good" nutrition from the perspective of the Holy Quran.
Materials and methods: This article is written in a review method and in a library style.
Findings: the necessity of "halal and healthy" nutrition and its effects on healthy human life; The general pattern of food classification and the style of halal and tayyab nutrition, the medical effects of "halal and tayyab" nutrition and the side effects of Haram and Khabis nutrition, halal and tayyab nutrition in special conditions (pregnancy, breastfeeding and crises) and its jurisprudence; It is one of the chapters that have been mentioned in the Quran.
Conclusion: The Quranic pattern of "Halal and Good" nutrition can open new horizons for the researchers of this field while helping to improve the lifestyle.

Key words: Nutrition, Halal, Tayyab, Haram, Quran

Analysis of nutrition from the perspective of the Holy Quran

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Abstract:

One of the most important factors of health and well-being is following the health teachings in eating and drinking. As a comprehensive book that responds to the material and spiritual needs of mankind in every era, the Holy Quran has provided teachings and recommendations regarding human nutrition, the observance of which not only makes the body healthy, but also has a positive effect on the growth of the soul and its spirituality. Therefore, maintaining the health of the body is considered a valuable tool for its perfection and excellence. The present research tries to establish a relationship between the Holy Quran and healthy nutrition with a descriptive-analytical method and a Quranic and narrative approach. Some of the Quranic recommendations regarding health and nutrition that are mentioned in the Holy Quran are:Advising on halal and good food and not following evil desires And he directed it to be a kind of feeding, so let the man look at his food and recommend it to him.And his advice was important to him, daden by his rose, and the statement of Jaygah was that it was necessary to feed him, O you who believed, fasting is written upon you as it was written for those who were written to you. Behdasht Feeder of the Holy Qur'an, as a rank, and a verse in Barkhordar Ast;Nutrition has a high status in the Holy Quran; As in this regard, the Holy Prophet (PBUH), the Holy Prophets (PBUH) and Islamic sages have given valuable recommendations about nutrition in addition to the Quranic instructions. He pointed out the very valuable recommendations of the Qur an in the matter of nutritional health, using and benefiting from halal and good food and avoiding haram foods, which adherence puts a person on the path of monotheism.

Keywords: Holy Quran, nutrition, lawful and Tayyeb

Analysis of the process of the effect of Tayyeb food on spiritual conduct

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Abstract

The most important goal of Islam is the spiritual journey of man towards God and getting close to him. One of the fundamental and influential factors in this process is the food that humans benefit from. Therefore, in the program it presents for human happiness, the Holy Quran pays special attention to The nutrition institution has determined dos and don'ts in this regard. What deserves to be researched in the meantime is the analysis of how food affects the spiritual conduct of a person. For this purpose, this article has tried to address some of the effects of nutrition on how the process of Tayyeb food affects the spiritual conduct. The results of this article, which is organized by relying on the descriptive-analytical method and using the library document analysis approach, show that Tayyeb food has a significant effect on the health of the body, faith and good deeds, and this effect can be seen in the form of leisure. Nafs analyzed the body modification (working with matter) in the light of benefiting from Tayyeb food and as a result reaching stronger perceptions, as well as the deep connection between body and soul and mutual influence.

Keywords:Tayyeb food, spiritual behavior, faith, good deeds, connection between soul and body.

Haram food indicators in religious teachings

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Abstract

Providing a program to meet the needs of human life based on getting closer to the Almighty God is one of the fundamental goals of the religion of Islam. The importance of this is doubled when the way to meet food needs has a direct and effective relationship in the formation of the personality and existential structure of every human being. Based on this, explaining the indicators to recognize the forbidden food and in the light of that the realization of the Islamic lifestyle has an undeniable necessity. For this purpose, the current research relies on the descriptive-analytical method and using the approach of analyzing library documents to explain and present the rules of forbidden food from the perspective of religious teachings. The results of this article show that by referring to religious sources and analyzing the language of religious evidence; Impurity, carrion, forbidden meat, evil and intoxicants are some of the topics that are considered haram to eat. It is worth noting that the prohibition of oral use of these items does not mean the prohibition of their other benefits; In the same way, taking advantage of haram food in case of consumption of haram material is not a problem, and in times of emergency, it is permissible and even obligatory.

Keywords: edible, halal, haram, impurity, carrion, forbidden meat, emergency, religious teachings.

Characteristics of Tayyeb food from the perspective of the Quran

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Abstract

Nutrition is among vital processes of life and central to health. It also plays a significant role in securing religious bliss and material life of man according to Islamic foundation. From the point of view of Islamic ideology,nutrition affects human body, thought and belief. Accordingly, the purpose of this study is characterizing Tayyib (good) food according to holy Quran. Tayyib food means Halal, clean, pure,sweet, smelling, delicious, delightful, hygienic, tasty, good food that a Tayyib human-being must be moderate in its consumption.

Keywords: Quran, Tayyib food, nutrition

The role of Tayyib food in the health of Islamic society from the of the Holy Quran perspective

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Abstract

Nutritional hygiene has a high place in the Holy Quran and Tayyib food is mentioned many times. Islamic religious texts invite man to the health of body and soul, and in this regard, there are teachings for the realization of the health of the body and instructions about food and drink to achieve the health of the Islamic society. According to Islamic culture, observing the do's and don'ts of religion in the field of nutrition has far-reaching effects on individual and social life and leads to the moral and behavioral excellence of the individual and society. Due to the necessity of the health of the Islamic society in this article, the role of Tayyib food in the health of the Islamic society from the perspective of the Holy Quran is discussed.

Keywords: Tayyib food, Holy Quran, Health, Islam

Tayyib Food for Ramazan from the Perspective of the Holy Quran and the Traditions of Islamic Leaders

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Abstract

Observation of the health instructions of Islam in eating and drinking, especially in the holy month of Ramazan, is one of the most important factors of health, vitality, longevity and benefiting more from the blessings of the holy month of Ramazan. If people pay attention to their eating and drinking, most diseases will be removed from human society, and they will enjoy of life and the blessings of the holy month of Ramazan. Islamic guidelines in this regard are important and valuable. Due to the importance of healthy nutrition during Ramazan, in this article, Tayyib food for Ramazan from the perspective of the Holy Quran and the guidelines of the Holy Quran and Islamic leaders on the food of Muslims are presented.

Keywords: Tayyib Food, Healthy Nutrition, Holy Quran, Ramazan, Islam

A study of the nutritional and health properties of milk and dairy products in the Quran, hadiths, traditional medicine and modern medicine

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Abstract

Due to the effect of nutrition on the body, soul and psyche in Islam, special attention has been paid to this issue, so that many verses and hadiths emphasize the importance of this issue. One of the most useful foods, which is called heavenly food, is milk, which in this study has tried to express the benefits of this food according to verses, hadiths, hadiths of the infallibles and also from a scientific point of view.

Keywords: Milk, dairy, nutritional characteristics, Islam

The importance of nutritional health on human physical and mental health

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Abstract

Introduction: One of the approaches of the Qur'an in maintaining and promoting health is nutritional recommendations in numerous verses. In the teachings of revelation, healthy nutrition includes physical, spiritual, psychological and social orientations. The purpose of this study is to investigate the importance of nutritional hygiene on physical health and the human soul is from the perspective of the Qur'an**.**
Search method: This study was used in a review method and by searching in Iranian and international databases such as sid, Google Scholar, with related keywords.
Findings: According to the reviewed sources, the relationship between food and the mind is one of the issues mentioned in the Islamic school. Therefore, the issue of nutrition is one of the strategic categories in the physical and mental development of humans. The Holy Quran mentions the necessity and importance of health, hygiene and its effect on human body and mind. Based on this, in the basics of Islamic health, observing and maintaining health is considered one of the public interests of the social system. Therefore, eating halal food, in addition to having individual positive effects on the human body and mind, also maintains social security and ultimately the health of society.
Conclusion: Health is of great value in the transcendental culture of Islam. To the extent that God introduces the Qur'an as a book of guidance and health. Studying in the Quran tells about various health guidelines about health.Therefore, future research can reveal more causes of health resulting from nutritional hygiene with the help of Quranic guidelines.

Keywords: health, nutrition, physical health, mental health

Effects of Ramadan and Non-Ramadan Intermittent Fasting on Gut Microbiome.

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Abstract

Background and purpose: In recent years, intermittent fasting has gained popularity in the health and wellness in the world. There are numerous types of intermittent fasting (IF), all of which involve fasting periods that last longer than an overnight fast and involve limited meal time-windows, with or without calorie restriction. The objective of this review is to summarize the current evidence for the effects of Ramadan and non-Ramadan intermittent fasting on gut microbiome.

Materials and methods: We explored Pubmed, Scopus, Web of Science and Google Scholar according to the PRISMA criteria (Preferred Reporting Items for Systematic reviews and Meta-Analysis). Animal and human studies were screened and reviewed separately by two researchers.

Results: Twenty-eight studies were selected after screening. Some of the studies were performed on animal models and some on humans. The results of these studies showed different evidence of the effect of fasting diets on the gut microbiota such as increasing microbial diversity, reducing inflammation, and increasing the production of beneficial microbial compounds known as short chain fatty acids (SCFAs). Many beneficial bacteria, such as Lactobacillus and Bifidobacterium, had significant shifts in individuals on fasting diets. However, some studies have reported adverse effects of fasting diets on the structure of the microbiome.

Conclusion: In general, most studies have seen favorable results following adherence from the fasting diets on the intestinal microbiome. However, because more studies have been done on animal models, more human studies are needed to prove the results.

Keywords: Fasting; Intermediate Fasting; Ramadan; Gut microbiome; Review

Introduction

Calorie restriction (CR), described as a decrease in calorie consumption without hunger, has already been demonstrated in various mammalian species to enhance life span, increase numerous physiological indicators, and lower metabolic parameters for chronic illness (Klempel et al., 2013;Gabel et al., 2019). There are numerous types of intermittent fasting (IF), all of which involve fasting periods that last longer than an overnight fast and involve limited meal time-windows, with or without calorie restriction (Varady, 2011;Chow et al., 2020). Ramadan fasting is one of the most common types of fasting diets in which millions of Muslims around the world do not receive any food or drink for a daily time varies between 12 and 22 hours (mean 12–14 hours), depending on the geographical location and season during a special month for a month. Ramadan also spelled Ramazan, Ramzan, Ramadhan or Ramathan, is the ninth month of the Islamic calendar, observed by Muslims worldwide as a month of fasting (sawm), prayer, reflection and community (Rashed, 1992). According to Islamic law, during the days of Ramadan, healthy adults must fast at certain times of the day, while fasting is not required for premature children, the elderly, the sick, and pregnant and lactating women (Bazzano et al., 2018).

In addition to Ramadan fasting diets, in recent years, there has been an increased interest in following modified fasting diets aimed at weight loss or the management of some chronic diseases among people in different countries (Bagudu et al.). Intermittent Fasting have greatly increased in recent decades as weight loss and some other metabolic benefits (Collier, 2013). The effectiveness of these diets in weight loss or management of metabolic parameters has varied depending on the type and duration of fasting diets (Correia et al., 2021).

The human gastrointestinal microbiome, which contains millions fungal, bacteria and other compounds, can be affected by various environmental factors such as diet. On the other hand, various studies have shown that adverse changes in the intestinal microbiome can be associated with the development of various chronic diseases (Asnicar et al., 2021). Some findings have revealed that fasting diets can also cause changes in the microbiome (Beli et al., 2018;Su et al., 2021b).

The objective of this review is to summarize the current evidence for the effects of Ramadan and non-Ramadan intermittent fasting on gut microbiome. We first review the evidence from pre-clinical studies to provide a background on the purported mechanisms by which fasting diets induces changes in gut microbiome and then focused on human studies.

Methods

The PubMed, Web of Science, Scopus and Google Scholar databases were searched from their inception until December 2021 according to the PRISMA criteria (Preferred Reporting Items for Systematic reviews and Meta-Analysis). We used from the keywords included "gut microbiome" OR "Fecal microbiota" OR "Gut microbial profile" OR "Gut microbiota" OR " "gut flora" OR "intestinal flora" OR "intestinal microbiota" in combination with Fasting OR "Intermittent fasting" OR "Ramadan Fasting" OR "Islamic fasting". Additional items were added after examining the referenced articles (Figure 1). Two authors independently assessed the abstract and full text of the articles, and animal and human studies, which evaluated the effect of different types of fasting on the microbiome, were screened. Disagreements were resolved by consensus.

Result

Twenty-eight articles were included in the qualitative synthesis. The characteristics of the evaluated studies and their results, including the results of animal studies and human studies, are listed in Tables 1 and 2. The following are the results of animal studies and then the results of human studies.

Experimental Studies

Various animal studies have evaluated changes in the gut microbiome following a variety of fasting diets. Most animal studies on this interaction have been conducted in the past five years. Liu et al. in an experimental study compared the effect of intermediate fasting (IF) with melatonin administration on clinical variables and changes in the intestinal microbiome. They found that IF compared to the control group led to a significant increase in the abundance of Lactobacillus, Ruminococcus and Akkermansia strains. Also, they found a significant reduction in the abundance of Helicobacter, Prevotella, and Parasutterella in the IF group (Liu et al., 2021). In another study on farmed mink (Neovison vison), the gut microbiota load and diversity showed no change after three days of fasting. Firmicutes were as the major phylum in the gut of these animals, however the Proteobacteria and Fusobacteria also were seen in another study (Bahl et al., 2017). Limited duration of fasting and short gastrointestinal tract are reasons of non-significant changes in these animals. The rapid movement of food through the gastrointestinal tract may not allow enough time for bacterial metabolism to provide an environment that is suitable for growth of anaerobes (Ley et al., 2005).

Beli et al., evaluated the effects of long-term intermittent fasting (IF) on gut microbiome, retinopathy and prolongs survival in db/db mice. The animals were fed ad libitum (AL) before the IF was initiated at 4 months of age. The db/db mice in the intervention group were then exposed to IF daily for up to seven months. Microbiome analysis revealed increased levels of Firmicutes and decreased levels of Bacteroidetes and Verrucomicrobia in the IF group than control. Compared to the db/db mice on AL feeding, microbiome changes in the fasting group were associated with an increase in the gut mucin, goblet cell number, villi length, and reductions in plasma peptidoglycan (Beli et al., 2018). It has been reported in the previous studies that higher Firmicutes to Bacteroidetes ratio is associated with obesity (Ley et al., 2005;Ley et al., 2006), as well as improve energy harvesting capacity (Turnbaugh et al., 2006). In this study, researchers used measurement of plasma peptidoglycan levels as an indicator of damage to the blood-brain barrier, and the results showed that IF regimen reduced plasma peptidoglycan levels and improved blood-brain barrier integrity. It has also been shown that a decrease in peptidoglycan concentration following IF is consistent with a reduction in endotoxemia (Beli et al., 2018). Therefore, fasting diets effect on weight loss through changes in the gut microbiota diversity and number, as well as peptidoglycan production. Gut microbiota involves major energy metabolic processes (Rinninella et al., 2020). Some studies have found a significant association between intestinal dysbiosis and energy dysmetabolism-induced chronic diseases such as diabetes, metabolic syndrome and obesity (Rong et al., 2021b). The positive results of the IF regimen on animal models with hypertension have also been shown in some studies (Shi et al., 2021).

Another part of animal studies has evaluated the effect of fasting on intestinal microbiome in animal models of neurodegenerative diseases. Cignarella et al. evaluated the effects of IF on gut microbiome and clinical symptoms of animal models of multiple sclerosis (MS), which named experimental autoimmune encephalomyelitis (EAE). They found that IF led to a significant improvement in the gut bacteria richness, enrichment of the Lactobacillaceae, Bacteroidaceae, and Prevotellaceae families and enhanced antioxidative microbial metabolic pathways. The results of this study also showed that the IF reduced the differentiation of native T cells into T17 cells, which secrete proinflammatory cytokines, and, conversely, increased the differentiation into regulatory T cells. Interestingly, the results of this study showed that fecal microbiome transplantation from mice under the fasting diet to mice with EAE ameliorated the symptoms, which could indicate the positive effect of the fasting diet (Cignarella et al., 2018b). On the other hand, some studies have shown that IF cause weight loss, reduce lipid peroxidation, and hepatic steatosis on obese mice through changes in microbial profile. Also, it has been reported in this study that IF led to a significant increase in the intestinal flora community diversity (Firmicutes to Bacteroidetes (F/B ratio) and relative increase in the Allobaculum abundance) (Deng et al., 2020). Increasing the abundance of Firmicutes following fasting diets can increase the production of short-chain fatty acids (SCFAs). SCFAs have the ability to increase the integrity of gut barrier, strengthen the immune system, reduce weight and

insulin resistance (Canfora et al., 2015). Moreover, fasting diets effect on the α-diversity (richness) and β-diversity (variety) of gut microbiota (Beli et al., 2018). Some pre-clinical studies have shown that IF could increase β-diversity, but the results on the effect of fasting diets on α-diversity are contradictory (Li et al., 2017;Beli et al., 2018;Cignarella et al., 2018a). Seven months IF on mice gut microbiota increased β-diversity compared in animals (Beli et al., 2018). Furthermore, weight loss introduced as the important and effective factor on α-diversity of gut microbiota (Cignarella et al., 2018a), however it varies greatly during the day and dependents to dietary content (Zarrinpar et al., 2014; Zeb et al., 2020).

On the other hand, some studies have evaluated the effect of fasting diets on gut microbiota changes. Li et al. evaluated the effect of 12, 16 or 20-hour fasting diets on the gut microbiome for 1 month. The results of this study showed that the composition of the gut microbiome changed in all types of fasting diets. At genus level, 16 h fasting led to increased level of Akkermansia and decreased level of Alistipes, but these effects disappeared after the cessation of fasting. No taxonomic differences were identified in the other two groups (Li et al., 2020). In some previous findings, an increase in Akkermansia strains has been associated with metabolic benefits such as a reduction in the severity of fatty liver and intestinal inflammation (Anhê et al., 2015). Increased levels of Alistipes can also exacerbate gut inflammation (Saulnier et al., 2011;Naseribafrouei et al., 2014).

Given that different metabolites are produced by the gastrointestinal microbiome, some other studies have evaluated these metabolites produced by microbiota following fasting diets. It has been reported an increased plasma levels of some metabolites such as tryptophan, serotonin, tryptophan, various bile acids, propionate and acetate following the administration of fasting diets in animal samples (Li et al., 2017;Martin et al., 2019;Zhou et al., 2019). These results have also been confirmed in some human studies (Liu et al., 2020). Changes in the production of some metabolites can affect processes such as inflammation in the body. For example, some preclinical studies have shown that fasting diets exert inhibitory effects on the biosynthesis pathways of lipopolysaccharides by altering the intestinal microbiome. Lipopolysaccharides are among the major constituents of the outer membrane of gram-negative bacteria, and studies have shown that increased production of lipopolysaccharides can induce toll like receptor-4 (TLR-4). TLR4 represents a key receptor on which both infectious and noninfectious stimuli converge to induce a proinflammatory response (d'Hennezel et al., 2017).

Human Studies

According to the positive results of pre-clinical studies, in recent years, various human studies have evaluated the association between intestinal microbiome and fasting. In some human studies, fasting diet of Ramadan type on intestinal microbiome has been evaluated (Özkul et al., 2019b;Ozkul et al., 2020;Ali et al., 2021c;Mohammadzadeh et al., 2021b;Su et al., 2021c). The duration of fasting time was 12 to 18 hours per day in these studies. The results of these studies mainly showed changes in the intestinal microbiome following adherence to Ramadan fasting, some of which are mentioned below. In a clinical study in 2021, Mohammadzadeh et al. evaluated the effect of Ramadan fasting on serum levels of butyrate, intestinal microbiome and lipid profile. The results of this study showed that the serum level of butyrate in the fasting group increased significantly after one month. There was also a significant increase in the bacteroids and filminus strains in the intervention group (Mohammadzadeh et al., 2021b). In another study, which conducted on Pakistani and Chinese participants, researchers evaluated the effect of a 29-day Ramadan fasting on alpha and beta diversity. The results of this study showed that the population of some bacterial strains such as Bacteroidetes and Firmicutes increased in the Pakistani population following fasting, however no noticeable changes were observed in the Chinese population. In addition, it has been reported that fasting in both populations affects beta diversity. Moreover, lower levels of genus Coprococcus observed after Ramadan fasting suggesting that fasting could have implications on health. On the other hand, fasting could also have harmful effects on health(Ali et al., 2021b). A study of two cohort data showed that following a Ramadan-associated intermittent fasting increased microbiome diversity and was specifically associated with upregulation of the Clostridiales order–derived Lachnospiraceae. In fact, the fasting diet in this study increased the expression of butyric acid-producing Lachnospiraceae. These alternations were independent of living area, body weight and diet composition and disappeared again when fasting was stopped (Su et al., 2021b). Various studies have shown that changes in the intestinal microbiome cause changes in physiological functions and reduce energy intake. Thus, human microbiome can be an effector for physiologic effects of intermittent fasting (Su et al., 2021c). In another preliminary study, it was found that following the Islamic fasting diet caused significant changes in the intestinal microbiome, so that the number of A. muciniphila and B. fragilis group members increased, however, Lactobacillus spp. and Bifidobacterium spp. remained relatively unchanged perhaps due to low fiber intake (Özkul et al., 2019b). In addition to Ramadan fasting, some studies have examined the effect of restricted feeding in a form of intermittent fasting on the intestinal microbiome. One of the major problems seen in these studies is the low sample size. Therefore, it is difficult to generalize the results of these studies to large populations. Gabei et al. in a pilot study evaluated the effect of fasting in a form of intermittent fasting on the intestinal microbiome in adults with obesity. They found that intermittent fasting led to a significant weight loss. Baseline evaluation of fecal microbiome by 16 S rRNA

(ribosomal ribonucleic acid) gene sequencing showed that the predominant strains included Firmicutes and Bacteroidetes. However, at the end of 12 weeks of fasting diet, no significant change was observed in the abundance and distribution of dominant bacterial strains (Gabel et al., 2020). However, the results of some other studies were inconsistent with this study. Guo et al. in a RCT study were evaluated the effects of eight weeks of "2-day" modified IF in patients with metabolic syndrome. The results of this study revealed that eight weeks of "2-day" modified IF led to a significant reduction in fat mass, oxidative stress, inflammatory cytokines, and improved vasodilatory parameters. On the other hand, the results of this study showed that following the eight weeks of "2-day" modified IF caused a significant change in the composition of the intestinal microbiome, increased the production of SCFA and decreased lipopolysaccharide levels (Guo et al., 2021).

Conclusion

In this review study, we evaluated the effects of Ramadan and Non-Ramadan intermittent fasting on gut microbiome. The results of most animal and human studies indicate the positive effects of fasting on the composition and structure of the gut microbiome. In addition to the positive role of fasting on the composition and abundance of intestinal microbiome, in some studies, other positive results have been observed following the observance of fasting regimes. Positive alterations in gut microbiota, such as overexpression of A. muciniphila, B. fragilis, Bacteroides, and butyric acid-producing Lachnospiraceae, were found to be associated with improved health indicators and decreasing disease development during Ramadan fasting. However, factors such as the duration of fasting diets, the presence of chronic diseases and obesity can affect the results. Considering the role of intestinal microbiome changes in the management of various diseases, future studies, especially clinical studies, should evaluate the impact of fasting regimes, especially Ramadan, on the management of various diseases through changes in the intestinal microbiome.

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Table 1: Summary of the animal studies investigating the effects of fasting on gut microbiota

Study	Dietary Restriction Regimen	Study Model	Gut Microbiota Variations Induced by Dietary Restrictions	Potential Health Benefits
Shi et al. (2021)	IF for four days in two cycles	Hypertensive rat	Lactobacillus and Bifidobacterium abundance increased in the IF group than control.	Rats in the IF group had significantly lower blood pressure than control group.
Zhang et al. (2021)	(1) fed ad libitum, (2) 30% CR, (3) 5:2 IF regimen	7-week-old C57BL/6 male mice	30 % CR led to a significant increase in the Lactobacillus, and significant reduction in the Bacteroidetes. 5:2 IF regimen led to increase in the Bacteroides, Alloprevotella and significant reduction in the Lactobacillus.	IF group consume more energy than ad libitum and CR groups in the first 4 days after refeeding. Both of the CR and IF group had lower body weights, white adipose tissue and serum cholesterol than ad libitum group
Liu et al. (2021)	Four groups: control (C), intermittent fasting (F), melatonin (M), and intermittent fasting plus melatonin (MF)	Male C57BL/6J mice	The F and M groups had significantly lower alpha diversity than the MF group. Increase in the abundance of Lactobacillus, Ruminococcus and Akkermansia in the F group than control group. Reduction in the abundance of Helicobacter, Prevotella, and Parasutterella in the F group than C group.	There was no difference between the groups in the cumulative food intake. IF group had lower body weight, serum glucose and TG than control or melatonin groups.
Deng et al. (2020)	ad libitum (AL) group or an IF group for 30 days	Male C57BL/6J mice	IF did not change the bacterial community richness Reduction in the Firmicutes to Bacteroidetes (F/B ratio) and relative increase in the Allobaculum abundance.	Weight was significantly reduced in the fasting group, but the cumulative energy intake was not different. IF reduced liver steatosis and lipid metabolism,
Li et al. (2020)	ad libitum control group or intermittent fasting groups.	C57BL/6JLvri mice	There weren't significant differences between two groups in alpha diversity Mice in the 16 hours fasting had increased level of Akkermansia and decreased level of Alistipes	Cumulative food intake was not changed in the 12 hours fasting but changed in the 16 and 20 hours fasting
Park et al (2020)	IF vs ketogenic diet	Male Sprague Dawley rats: Alzheimer's disease (AD) model	In the IF group than keto group: Clostridales abundance decrease and Lactobacillales increase	IF than keto improved memory function

Study	Dietary Restriction Regimen	Study Model	Gut Microbiota Variations Induced by Dietary Restrictions	Potential Health Benefits
Kim et al., (2019)	Fasting: the ruminal fluids feeding and 24 h after fasting	Three ruminally cannulated Holstein steers	Reduced abundance of Anaerovibrio lipolytica, Eubacterium ruminantium, Prevotella albensis, Prevotella ruminicola, and Ruminobacter amylophilus	Increase in the gas, ammonia and microbial protein production
Cignarella et al. (2018)	In the IF mice, food pellets were provided or removed at 9 am each day. Control group had unrestricted access to food	Mice	Lactobacillaceae, Bacteroidaceae, and Prevotellaceae families increased in the IF group. Fecal transplantation from mice in IF group to control, reduced the severity of EAE in this group.	IF reduced the differentiation of native T cells into T17 cells
Catterson et al. (2018)	A 40-day course includes 2-day fed and 5 fasting days	fruit flies (Drosophila melanogaster)	Reduced bacterial abundance in IF group than control Reduction in age-related pathologies and improved gut barrier function in the IF group	Increases Stress Resistance, not changed cumulative food intake
Beli et al. (2018)	Ad libitum diet vs. intermittent fasting ad libitum diet as 24 h feeding-24 h fasting	db/db mice	Increased levels of Firmicutes and decreased Bacteroidetes and Verrucomicrobia in intermittent fasting group.	Glycated hemoglobin levels were not affected by the IF regimen, survival rate was significantly improved in the IF group
Wei et al., (2018)	Fasting diet with 30% restriction of calorie for one week	6‐week‐old male C57BL/ksJ‐db	Increase in the Lactobacillaceae, Bacterioidaceae and Prevotellaceae abundance	Increase in the ketone production Decrease in the proinflammatory cytokines
Bahl et al. (2017)	3 days of food deprivation (fasting)	farmed mink (Neovison vison)	The bacterial load and community structure within the mucus was not severely impacted by 3 days of fasting.	-
McCue et al. (2017)	21 days of fasting	Mice, quail, tilapia, toad, geckos	Alteration in Bacteriodetes, Firmicutes, Proteobacteria, Fusobacteria and Verrucomicrobia	Changes in distal intestine morphology
Sonoyama et al. (2009)	96 hours fasting compared to the control group	Male Syrian hamsters	Increase in the proportions of injured bacterial Cells Increase Akkermansia muciniphila, a mucin degrader, in fasting group Clostridia increased in the fed group	Reduction of total SCFA concentration in the fasted group than fed group.

AD, Alzheimer's disease; CR, calorie restriction; IF, Intermediate fasting; SCFA: short chain fatty acid

Table 2 Summary of the human studies investigating the effects of fasting on gut microbiota alterations

First Author	Fasting model	Study Type /Duration	Study Population	Results
Su et al. (2021)	1 Month of intermittent fasting	Longitudinal physiologic data in 2 cohorts, sampled in 2 different years	Healthy nonobese young and middle-aged men	Ramadan-associated intermittent fasting increased microbiome diversity and was specifically associated with upregulation of the Clostridiales order–derived Lachnospiraceae
Mohammadzadeh et al. (2021)	hour time restricted feeding intervention (8-hour feeding window/16-hour fasting window)	before/after the cross-sectional study	Healthy adult volunteers (n=30)	Butyrate significantly increases, the gut Bacteroides and Firmicutes increased by 21 and 13 percent after Ramadan
Gabel et al. (2020)	a daily 8‐h time restricted feeding (8‐h feeding win‐dow/ 16‐h fasting window) for 12 weeks	Pilot study/ 12 weeks	Adults with obesity (n =14)	Gut microbiota phylogenetic diversity remained unchanged.
Maifeld et al. (2021)	Ramadan fasting	Clinical trial	healthy subjects (n =30)	Fasting alters the gut microbiome, impacting bacterial taxa and gene modules associated with short-chain fatty acid production
András et al. (2021)	5-days with a daily nutritional energy intake of 300–350 kcal/day, derived from vegetable juices and vegetable broth, followed by a modified Dietary Approach to Stop Hypertension diet	randomized-controlled bi-centric/ 12 weeks	patients with Metabolic Syndrome (n =32-31)	Fasting alters the gut microbiome, impacting bacterial taxa and gene modules associated with short-chain fatty acid production.

First Author	Fasting model	Study Type /Duration	Study Population	Results
Lilja et al. (2020)	Buchinger fasting: 250 kcal/day for 5 days	RCT	154 healthy adults	↑distribution of Proteobacteria, ↓Firmicutes/Bacteroi- detes ratio Fasting mimetic
Guo et al. (2020)	"two-day" modified IF	Clinical trial, 8 weeks	Adults with Metabolic Syndrome (n =39)	Changes in gut microbiota communities, increase the production of short-chain fatty acids, and decrease the circulating levels of lipopolysaccharides.
He et al. (2019)	water-only fast or juice fast for seven days	Intervention pre-post design	16 healthy individuals, Age: 18–40 year	Water-only fasting changed the bacte- rial community, ↑more homogenous gut micro- biomes, ↓Fusobacterium. ↓colorectal cancer
Ikram et al. (2021)	Ramadan fasting	cohort	healthy adult participants (n =34)	↑Klebsiella,Faecalibacterium, Sutterella, Parabacteroides, and Alistipes ↓Coprococcus, Clostridium_XlV, and Lachnospiracea
Balogh et al. (2020)	Buchinger fasting protocol followed by DASH diet	RCT/ 5 days	control (n=36), fasting (n=35)	↑*Clostridial Firmicutes* ↓*butyrate producers*

First Author	Fasting model	Study Type /Duration	Study Population	Results
Ozkul et al. (2020)	Ramadan fasting	pilot study / 29 days	healthy adult participants (n =9)	*Butyricicoccus, Bacteroides, Faecalibacterium, Roseburia, Allobaculum, Eubacterium, Dialister* and *Erysipelotrichi* were significantly enriched genera after the end of Ramadan fasting.
Mesnage et al. (2019)	Buchinger fasting (daily energy intake of about 250 kcal and an enema every 2 d	clinical study/ 10-day	healthy men (n =15)	decrease in the abundance of Lachnospiraceae and Ruminococcaceae increase in Bacteroidetes and Proteobacteria (Escherichia coli and Bilophila wadsworthia)
Remely et al (2015)	A fasting program with laxative treatment for 1 week followed by a 6-week intervention with a probiotic formula	One week	overweight people (n=13)	Fasting group had higher abundance of Faecalibacterium prausnitzii, Akkermanisa and Bifidobacteri

The effect of Islamic slaughter on the quality, physicochemical, sensory and nutritional characteristics of meat and comparison with other slaughter methods (review article)

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Abstract

There are different methods to kill animals around the world. Halal slaughter is the method used to kill animals in Islam. With the increase in the world's Muslim population and interest in practicing religious teachings, the expansion of halal food markets has come about. Studies show that different slaughtering methods have an effect on the quality and chemical and biochemical composition of meat such as iron and the amount of glucose in the blood, as well as physical properties such as the color and juice retention capacity of the meat, the microbial and sensory properties of the meat, after the death of the animal. . The halal slaughter method includes a horizontal cut and cutting the four vessels of the throat, trachea and esophagus, without using any kind of anesthesia before slaughter. After slaughter, a large amount of blood is removed, the complete discharge of blood during slaughter leads to better quality, longer shelf life and reduction of meat and carcass defects. Halal slaughter can also protect human health against infectious diseases. In this review article, a comparison has been made between the halal slaughtering method and other slaughtering methods, and also the quality and health of halal meat and other slaughterings are examined from a biochemical, biophysical and microbial point of view.

Keywords: Halal slaughter, methods of slaughter, anesthesia before slaughter, meat health, meat quality

Explanation of healthy nutrition in old age based on verses and traditions

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Abstract

Introduction: Nutrition is one of the vital processes of human life, and based on Islamic principles, it plays an essential role in ensuring the happiness of religion and the human world. Nutrition is one of the factors affecting the health of the body and soul, which can play a decisive role in health and illness and the quality of life of a person. Aging is a natural phenomenon that cannot be prevented, but it is possible to improve the quality of life in old age by having healthy nutrition. Therefore, this research was conducted with the aim of explaining the process of healthy eating in old age based on verses and traditions.

Materials and methods: This study has extracted and analyzed the indicators related to nutrition in old age from authentic verses and traditions with the method of qualitative content analysis and based on religious indexing, and has explained the process of healthy nutrition in old age.

Result: With increasing age, the need for energy of the elderly decreases and the desire to consume food decreases, which is due to the high age and lack of physical movements and the decrease of primary body energy. Fast-digesting and nourishing foods are suitable for this group, which are recommended to be eaten in small amounts and frequently. Dinner is one of the most important meals for the elderly, which according to traditions, should not be omitted.

Conclusion: What has been stated about the basics of Islamic religion in the field of healthy nutrition for the elderly has a practical application in such a way that adherence to its instructions can prevent many diseases related to nutrition (obesity, high blood pressure, cardiovascular, etc.), therefore, the instructions of Islam in the field of healthy nutrition can be recommended to the world as a basic strategy.

Keywords: healthy nutrition, old age, verses and traditions

An Overview of the Halal Status of Consumption of Cultured Meat from the Perspective of Islamic Jurisprudence

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Abstract

Cultured meat is one of the most promising ideas in food technology, and it is expected to enter in the market in the future years. One of the main obstacles for the supply of such products is the acceptance of this product by consumers who follow their religious teachings about food consumption. The results show that in most religions, if the production of this product is consistent with the religious teachings related to dietary meat, the probability of accepting this type of meat increases. In this article, while stating the importance of consuming halal meat, religious views on cultured meat will be discussed from the point of view of Islamic Sharia.

Keywords: Cell culture, Cultured meat, Halal, Islamic jurisprudence, Technology.

Tayyeb food from the perspective of the Qur'an

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Abstract

The religion of Islam as the most comprehensive model of human life, all human needs including spiritual, physical and has taken into consideration and has set guidelines for various aspects of human nature according to his good and goodness. Since eating is one of the basic human needs, many verses of the Qur'an contain hints about healthy eating and related to human physical and mental health. In the current research, by extracting related verses and examining the views of commentators, as well as by descriptive-analytical method, it was determined that there are orders in the Qur'an on how to choose food, including the order to exclusively use Tayyeb and halal foods. Also, from the emphasis of the verses on the Tayyeb food, apart from its halal, we can come to the point that every halal food is not necessarily Tayyeb, but every Tayyeb food is necessarily halal, and a person is only allowed to use non-Tayyeb food in certain cases. The verses of those cases have been explained.

Keywords: Good, halal, good food

Probiotics and their Health Effects

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Abstract:

Probiotics are live and active microorganisms (bacteria and yeast) which are also known as beneficial bacteria and by penetrating into different parts of the body, especially the digestive system (mainly the intestine) in appropriate numbers and with their activity through maintaining and improving the balance of the microbial flora. Among beneficial and pathogenic microorganisms, the intestine contains health-giving properties for the host. Probiotics are micro-organisms that receive them in sufficient numbers and live to the consumer, have health-giving effects such as protecting the body's immune system against allergic reactions, immune system disorders and skin infections. Food products enriched with probiotics have more nutrients such as vitamins, fibers and rich minerals compared to other foods. Probiotic microorganisms not only do not cause problems in the production process of the product, but also have a positive effect on improving its health and usefulness. Nowadays, due to the importance of human nutrition and food health, the use of probiotic products and the need to pay more and more comprehensive attention to these vital microorganisms are felt. In this study, various types of probiotics and their role in improving human health are introduced.

Key words: Probiotics, Useful products, Health effects, beneficial bacteria

Investigating the therapeutic properties of camel milk from the perspective of the Holy Quran and modern science

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Abstract

Introduction: In the Holy Quran, special mention is made of camel milk. Also, today with the advancement of science, various therapeutic properties of camel milk have been studied in scientific articles. Therefore, the major purpose of the researchers in conducting this study is to investigate the therapeutic properties of camel milk as a halal food based on the Holy Quran, hadiths and scientific articles.
Methodology: In this review article, in order to find related articles, the keywords "Camel Milk", "Camel Dairy" and "Camel" were searched in Persian and English databases of PubMed, Scopus, Google Scholar, ISC and SID. In this study, articles published between 2005-2022 were examined. The Holy Quran, hadiths and articles on traditional medicine were also examined.
Findings: Numerous studies have investigated the therapeutic effects of camel milk on various diseases such as diabetes, cancer, hepatitis, hypertension, gastrointestinal diseases, allergies, tuberculosis, autism and fatty liver. These studies attributed the therapeutic effects of camel milk to the various antioxidant, antimicrobial, and anti-inflammatory substances in camel milk such as lactoperoxidase, lactoferrin, lysozyme, catalase, hydrogen peroxide, immunoglobulins, glutathione peroxidase, alpha-tocopherol and Beta-carotene.
Conclusion: The results of studies indicate the high importance of camel milk in the prevention and treatment of various diseases such as diabetes, cancer, hepatitis, hypertension, gastrointestinal diseases, allergies, tuberculosis, autism and fatty liver. These scientific findings can to some extent indicate the emphasis of Islam and traditional medicine on the consumption of camel milk as a halal food.

Keywords: Holy Quran, Camel milk, Modern science.

B- Oral presentations

B1- Laws and standards

Indicators and evaluation method of food products in Tayyab model

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Abstract:

Introduction: Tayyeb Emblem is designed based on religious principles (verses and hadiths) and has five fundamental principles, including being halal, health, originality, attractiveness, beauty, and blessing. The evaluation model of Tayyeb is derived from religious foundations and scientific principles and for food products, like other products, it has a specialized evaluation checklist in the implementation phase.

Materials and methods: In order to compile Tayyeb checklists, in the first step, scientific studies were conducted to classify Tayyeb s component and principles based on religious studies. In the next step, under each of the five principles of Tayyeb, a number of components and indicators were extracted and the evaluation was done based on them.

Findings and conclusions: In the Tayyab evaluation checklist, based on the five principles mentioned, components were defined. Indicators such as occupational and health permits, legal ownership under the principle of being Halal, freshness and vitality, greenness, good character, appearance beauty under the principle of attractiveness, requirements of health and safety in raw materials, tools and working environment under the principle of health. Authenticity, naturalness and originality of raw materials under the principle of Originality and improvement of brand value and added economic and food value are also extracted for each of the components and evaluation is done based on them.

Keywords: Evaluation checklist, solution, effectiveness, added value

B2- Fundamental and practical research

The principles and components of Tayyeb Emblem

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Abstract

Introduction: The issue of ensuring safety and quality in the food industry, in addition to the final product, should include the entire production flow including raw materials, production method, processing and final product, the quality of the cycle of the surrounding environment (environment) and the quality of life of consumers, etc. Based on this, organic, halal quality control systems and similar systems have been created. This comprehensive approach can create a clear and correct path for the consumer. One of the monitoring systems that can be present in this supply, in addition to accompanying and using the existing monitoring systems, with a comprehensive and wide view of the aspects of Islam s attitude to the chain of food products, is Tayyeb. In this research, its principles and components have been studied.

Research method: This research was conducted by analyzing Islamic sources and existing scientific sources to investigate the principles of Tayyeb.

Findings and conclusions: The five basic components of Tayyeb emblem are health, being halal, originality, attractiveness and beauty, and blessing. Affirmative health issues related to health and safety; Being halal shows compliance with Shari a and legal frameworks; Originality based on the examination of local conditions, originality and naturalness; Attractiveness and beauty are the result of balanced implementation of elements of natural and spiritual beauty; And blessing indicates effectiveness, productivity, nutritional, economic and social values in the process of producing (food) products. These principles and components, indicators and metrics derived from it can be used as the most comprehensive and high-quality model for evaluating the quality and rating of food products; Due to its harmony with the monotheistic principles of life, this model can act as a coordinating system of experimental knowledge and technology with revealed principles and direct the flow of science and technology in line with the macrophilosophy of life, namely monotheism and God-seeking.

Key words: Tayyeb Emblem, being halal, health, originality, attractiveness, blessing

The effect of the Quranic verse on inhibiting the growth of molds

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Abstract:

Acostic waves and especially ultrasound application is one of the methods used in food processing or reducing the activity of some microorganisms in food. In this research, the effect of sound waves played on the basis of the Tar music based on the Qur'anic verse and also the text of that verse"Shahed-Allah-Anhu-La-Illah-El-La-Huwa" during a period of 1 to 5 days on inhibiting the growth of two molds, *Aspergillus niger* and *Botrytis cineree*, at a temperature of 25 °C and was evaluated inside the incubator. The results indicated that the effect of the written verse or the induced sound in the period of 4 and 5 days was significantly effective in reducing the growth of mold compared to the control.

Keywords: Aspergillus niger, Botrytis cineree, Acostic waves, Quran

Investigating of the indicators of Tayyeb concept as a top food brand

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Abstract

In Islamic resources, there are many propositions regarding food, nutrition and food technology, which could be considered as the basis of designing processes and food systems. Halal (permissible) as the most important issue in food industries is the result of converting the Islamic criteria in the context of foods to food products and standards. Holy Quran offers higher standards for food safety in Tayyeb concept. Tayyeb refers to clean, pure, originality, and comply with Sharia safety, and nutrients. Deeper analysis of religious propositions directs us to different concepts of *Tayyeb* with a quality far higher than the *Halal* brand. This paper reviews how food safety and hygienic practices are a part of the Tayyeb concept and how we can achieve Tayyeb assurance. A conceptual framework was constructed depicting the potential active Tayyeb food safety control practices and the obtained indicators and concepts were compared with previous investigation.

Keywords*:* Food safety, Health, Islamic ideology, Nutrition, *Tayyeb.*

1. Introduction

Issues such as food quality, food hygiene and food safety are always important issues at the international level. Food safety assurance is thus complicated and research is constantly conducted with an aim to improve existing food safety measures, find effective approaches and identify food sector's needs (Raheem & Demirci, 2018). In the heavenly religions, the need for a proper nutrition program has always been mentioned. The important issue is to obtain a valid method to derive the strategies needed to manage systems from religious statements (NAJI, Zamani, & Feizy, 2018). In viewpoint of Islamic ideology, nutrition impacts on man's body, mind and faith, although there is no difference in the appearance of food (Yousefi & Shirafkan, 2014). There are many propositions in food, nutrition and food technology field in Islamic sources, which can consider them as the basis of food processing design and systems for developing a superior brand in national and international scale (NAJI et al., 2018). From raw ingredients to final products food safety assurance covers the whole supply chain.

Nowadays, Halal brand has developed considerably in global food trade. Muslim customers worldwide must guarantee that the foodstuff they eat encounters Halal requirements under Sharia law (Raheem & Demirci, 2018). Halal is an Arabic word that is legitimate and permissible. The meaning of the word is lawful against the “Haram” term. Halal refers to what is permissible or lawful in traditional Islamic law. It is frequently applied to permissible food and drinks (NAJI et al., 2018; Raheem & Demirci, 2018). Growing demand for Halal products would also influence the demand of other services areas (Aghwan, 2018). The actual aim of Halal certification is to promote trade and maximise consumer choice. For a Muslim consumer a food is safe for consumption if it complies with requirements set by the fundamental (Raheem & Demirci, 2018). Holy Quran offers the highest standards of hygiene and food safety as title of Tayyeb for supplying all aspects of food quality in terms of purity, health, safety and nutrient. Interestingly, whenever the concept of Halal is presented in the context of food, the concept of Tayyeb is explicitly coupled. Therefore, it is necessary to use the combined expression “Halala Tayyiba” when Halal food is presented (Arif & Ahmad, 2011). Though the term “Halal" and "Tayyeb" are often mentioned together but Halal and Tayyeb have different meaning. Tayyeb foods have special attributes, which includes purity, nutritious and healthy, ethical, wholesome, usefulness, no harmful effects on soul and body. The food we eat must be good for us and not harm us (Zamani, Naji-Tabasi, Afkhami-Rouhani, Ahmadzadeh, & Shahidi-Noghabi, 2020). The contrary of Tayyeb is “Khabith” which connotes to everything that is impure, brings harm and disgust “makes lawful to them the pure things and makes unlawful to them impure things” (Alzeer, Rieder, & Abou Hadeed, 2018). Having a balanced meal is a main key in Tayyeb food. Therefore, Tayyeb must be seen as a food higher than Halal, which includes all aspects of the spiritual and nutritional properties (NAJI et al., 2018). To move toward more efficient Halal and Tayyeb practices these should be demanded, implemented, maintained and controlled by the whole Halal food sector, instead of just relying on the existence of food safety certification.

The Tayyeb concept has a wide scope under which various food sector issues could be discussed. However, this paper puts forth how food safety and hygienic practices are a part of the Tayyeb concept and how we can achieve Tayyeb assurance. Clear understanding of Tayyeb will enable us to facilitate the determination whether the end product, with regards to process and content, complies with Sharia or not. The findings will enable to move toward more practical Tayyeb policies and indices and improve the food softy. Therefore, the necessity of standardization of Tayyeb food, determination of Tayyeb food indicators, and comparison of the obtained indicators with the other researches were discussed in this paper.

2. The meanings of the word Tayyeb

A survey of the Arabic-speaking lexical sources reveals that the term Tayyeb has been used for many meanings. Delicacy, purification, the most virtuous of all things, the supreme of all things, being pleasant and noble, and any lawful thing (Halal) are among the meanings cited for the term Tayyeb in the Arabic word sources. Furthermore, learning synonymous, similar and contrasting terms also helps to better understand its semantic field and to establish the characteristics of the word Tayyeb, described in the Table 1.

Table 1.

The term Tayyeb is an adjective used for various subjects in the verses of the Holy Quran and Islamic literature. Table 2 describes the different uses of the Quran word Tayyeb, along with its sense of usage and meaning:

Table 2.

According to the previous contents, special meaning may be obtained from it depending on which subject the Tayyeb is used for; Purity from impurity, being lawful (Halal), pleasing, delicious, blessed, healthy, perfect, honesty, usefulness, being on the right path, being the best, and living a moderate life are among the meanings of this adjective on topics. Different can be used. On that basis, a general meaning for the word Tayyeb can be taken into account, which can be applied to all the examples mentioned. It may relay the following meaning to itself: Anything that has outward and inward purity and is far from outward and inward filth and is in accordance with and gentle with human nature, and as a result can be able to create outward and inward growth.

As mentioned before, Tayyeb encompasses not only dietary consumables but also in cosmeceuticals, personal healthcare, nutraceuticals, and pharmaceuticals products (A. A. Mohamad, Baharuddin, & Ruskam, 2015). This word is not used in relation to food in general, but it also covers various circumstances such as our intentions, words, acts, and beliefs (Ibn Rajab, 1980).

3. Tayyeb Food characteristics

The word Tayyeb can be combined with any other word to create combinations such as the Tayyeb land, Tayyeb friend, Tayyeb man or Tayyeb food. In this case, the word Tayyeb expresses a sublime quality, process and completeness for each subject. For example, Tayyeb food is expressed as follows:

Tayyeb food is a pure and developmental food that is in perfect harmony with the natural structure of the human body; therefore, in accordance with the taste and nature, being enjoyable, having a beneficial and constructive effect on the body and soul, and not having a harmful and destructive effect are the main characteristics of good food (Zamani et al., 2020).

This research is a review study on “Tayyeb” description based on opinion of Islam. Table 3 includes numerous references of sharia and documents written in the Tayyeb food field as well as the determination of their indicators.

Table 3.

According to previous studies (Table 3) seven metrics can be suggested with a specific description of Tayyeb food (Table 4). It should be noted that these characteristics which will be listed for Tayyeb food should all be present simultaneously in it (Figure 1).

"Foods" are not good and bad, they are just good and bad dietary patterns. While one of the characteristics of Tayyeb food is the alteration of the dietary pattern and this topic was included in the Tayyeb food area regulation.

While Tayyeb foods may hold promise for public health, there is concern that such foods may not be based on sufficiently good scientific evidence to support them. Thus, any benefits related to Tayyeb foods should be based on sound and specific scientific standards, including comprehensive safety and efficacy studies.

Figure 1.

4. Conclusions

Today, the number of consumers who take more responsibility for their health and well-being is increasing. Many consumers believe that a healthy diet is a safer way to treat the disease than medication. The total cost of chronic illness care is very high. Strategies for preventive health care, including dietary interventions, could save a great deal of money on the annual health care costs. Public interest in self-care and frustration with the existing healthcare system will continue to be a primary driving factor for customer buying decisions. Because of the opportunity to make statements on the health benefits, delicacy, purity, accordance with human nature, gentle with the spirit, high nutritional value, and physical and mental constructive effects of Tayyeb foods on food labels, it is not surprising that large companies will soon be involved in creating such foods for the health and wellness market.

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Table 1. Comparison of the word Tayyeb with opposite, similar and synonymous words

Title	Documentation	Reference
Contrasting words	Evil (anything that has filth and sin, outward or inward, and is not desirable to the soul)	(Dehkhoda, 1998)
Similar words	Good, delicious, lawful, expansive, perfume, the city of the Prophet, heaven, purification	
Synonymous words	Cleanliness or Purity is used only to express non-filthiness, whether it is good for the soul or not good for the soul; Although in addition to expressing non-filthiness, Tayyeb also indicates the desirability of the object for the soul.	

Table 2. Uses of the word Tayyeb in the verses of the Holy Quran

Reference	Field used	Prominent meaning
Sura Al-Baqarah, V. 267	wealth and assets	Purity, quality
Surah An-Nisa, V. 2		Superiority, quality
Surah An-Nisa, V. 43	Land and its belongings	Purity and cleanliness
Surah An-Nisa, V. 160	Foods, various matters of life	Purity, delectableness
Surah Ma'idah, V. 4		Cleanliness, no pollution and no harm
Surah Ma'idah, V. 5		
Surah Ma'idah, Vs. 87 and 88		
Sura A'raf, V. 157	Various aspects of life	Cleanliness, no pollution and no harm
Surah Yunus, V. 22	Wind, breeze	Pleasant, gentle, charming, helpful
Sura Ibrahim, Vs. 24 and 25	The tree, the believer	Blessed, clean, healthy, balanced
Surah An-Nahl, V. 97	living	Exalted, superior, pleasing, pure
Surah Fatir, V. 10	A believing man	Clean, pure, limpid

Table 3. Tayyeb indicators in the food field.

	Index	Statement in the references	Reference
1.	Delicious and pleasant	Tayyeb means good, tasty, agreeable, palatable, pleasant, pleasing, delightful, delicious, sweet, embalmed, perfumed and soothing to one's mind.	(Al-Amidi, 1980; Al-Ghazzali, 1993)
2.	Purity and cleanliness	Tayyeb represents a process through which the food passes through to achieve both objectives: maximum hygiene (clean) and minimum contamination (pure) without any potential toxic, Najis (ritually unclean) and Khabith (impure) ingredients.	(Al-Ghazzali, 1996; Al-Qurtubi, 1999; Alzeer et al., 2018; Ambali & Bakar, 2014; Arif & Ahmad, 2011; Ibn 'Ashur, 1984)
		Implementation of Tayyeb in food industries as a public health priority, is essential for the protection of health and for enhancement of the quality of life. Tayyeb takes into consideration food hygiene, food additives, contaminations and pesticide residues in order to prevent food related diseases.	(Ambali & Bakar, 2014; N. Mohamad & Backhouse, 2014)
		The word Tayyeb has been traditionally translated as pure, good and superb. The writers are of the opinion that the word Tayyeb can be aptly translated as 'with quality' or 'surpassed standard quality' in context of modern usage of the word quality.	(Ibn Rajab, 1980)
		Tayyeb which refers to clean, pure, safe, harmless and high quality.	(Ibn 'Ashur, 1984)
		Tayyeb means 'permitted and good or wholesome'.	(Regenstein, Chaudry, & Regenstein, 2003)
		It indicates the elements of hygiene, safety, and quality.	(Lokman, 2001)
		Tayyeb foods should be viewed from the aspect of its complete supply chain starting from the farm to the dinner table which includes the food processing and preparation, ingredients and cleanliness. Throughout the process, it is important to ensure that the food does not contain any illegal substances or it is contaminated by harmful products which may be harmful to the human's life and health.	(Arif & Sidek, 2015)
3.	Wholesome (Healthy)	The Creator asks the creatures to eat what is wholesome and nourishing that summed up in the word Tayyeb.	(Al-Ghazzali, 1996)
		The concept of Tayyeb represents the identification of all ingredients involved in the production, determination of toxicity status, and removal of repulsive, and toxic ingredients	(Alzeer et al., 2018)

	Index	Statement in the references	Reference
		The quality of halal food covers cleanliness or hygiene, safety, preparation, storage, and purification aspects, which are called “Tayyeb,” meaning wholesome or purity, nutritious, and safe.	(Kamaruddin & Jusoff, 2009)
		The presence of halal and Tayyeb ensures that halal food is secure and healthy.	
		Tayyeb is related to food safety.	(Demirci, Soon, & Wallace, 2016)
4.	Lawfulness (Halal)	The concept of Tayyeb not only look into the way of slaughtering or from material itself, but it covers all aspects including safety and quality of food as well as the necessities of hygienic along and sanitation requirements which encompass the holistic standards of good and wholesome as well as lawful (halal) by Allah	(Arif & Ahmad, 2011)
5.	Desirability and in accordance with the nature of the person	Tayyeb is mostly used to mean "in a good sense"	(Zakaria, 2015)
		Tayyeb should generate comfortable feeling as a main goal	(Alzeer et al., 2018)
		Tayyeb creates a comfortable feeling when food is taken. The comfortable feeling cannot simply be achieved by having healthy, safe and pleasant food, which is essential, but it can be accomplished if what we eat complies well with what we believe. Comfort food, that is selected and influenced by what we believe, is known to improve our mood, make us feel better and give us a sense of well-being.	(Bublitz et al., 2013; Wansink, Cheney, & Chan, 2003)
6.	Most nutritional value	Good of nutriational quality which are a foundation of good health.	(Arif & Ahmad, 2011)
7.	Physical and spiritual effect	What we eat will have impact on our character, Duaa (supplication) acceptance and personality.	(Jiang, King, & Prinyawiwatkul, 2014)
		The Tayyeb processing of Halal will have positive impact on mood, health and faith practicing.	
		The word al-Tayyebat is interpreted as halal, good, beneficial to the body and helpful in terms of habits and the law of Islam.	(Ibn Kathir, 1988)
		Tayyeb does not cause any pain or misery to the people who consume it; and it consists of elements that are nutritious and beneficial to the people who consume it.	surah al-Baqarah, verse 168
		Some researcher emphasise that good-quality food bounded by Islam is strongly related in developing good quality of human capital.	(Arif & Ahmad, 2011)

Index	Statement in the references	Reference
	Halala Tayyeba label on medicine will remind patient with Allah, the healer, and will intensify trust between patient, medicine, pharmaceutical companies and physicians. Patient feels that there is a cure for his illness, heart will be filled with hope, rather than despair, the soul and the psyche will be strengthened.	(Asgharipoor, Farid, Arshadi, & Sahebi, 2012)
	The word Tayyeb is not only clarified as good, pleasant and delightful, clean but also healthy and beneficent to our body.	(Arif & Ahmad, 2011)
	Tayyeb is Arabic word which means soothing to one's mind.	(Al-Amidi, 1980; Al-Ghazzali, 1993)
	The concept of Tayyeban does not mean that the food must be halal, good and pure only. It also means that the food must be beneficial to the body and does not cause any harm. Further, what is beneficial for the body is also beneficial for the human's mind and soul.	(Al-Ghazzali, 1996, 1993)
	Some researchers stated that the good quality food bounded by Islam has a strong relationship in developing good quality human capital.	(Arif & Ahmad, 2011)
	Halal and good quality food which encompasses its security, safety as well as the quality and incorporate the necessities of hygienic and sanitation requirements. Preservation of health is generally based on the condition of the stomach and its condition is generally base on what was consumed. Therefore, to develop good quality human capital, strict adherence by consuming only halal food is a must.	(Arif & Ahmad, 2011)
	If Muslims eat and consume what is on earth based on the standard of halalan Tayyeban, the effects on behavior, mind and soul are also good.	(Arif & Ahmad, 2011)
	Tayyeb is good for our body certainly good for our spirit, mind and consequently good for the development of good quality human being.	(Arif & Ahmad, 2011)
	Tayyeb complies well with Sharia and enriches societies with spiritual, moral and human values.	(Ambali & Bakar, 2014)

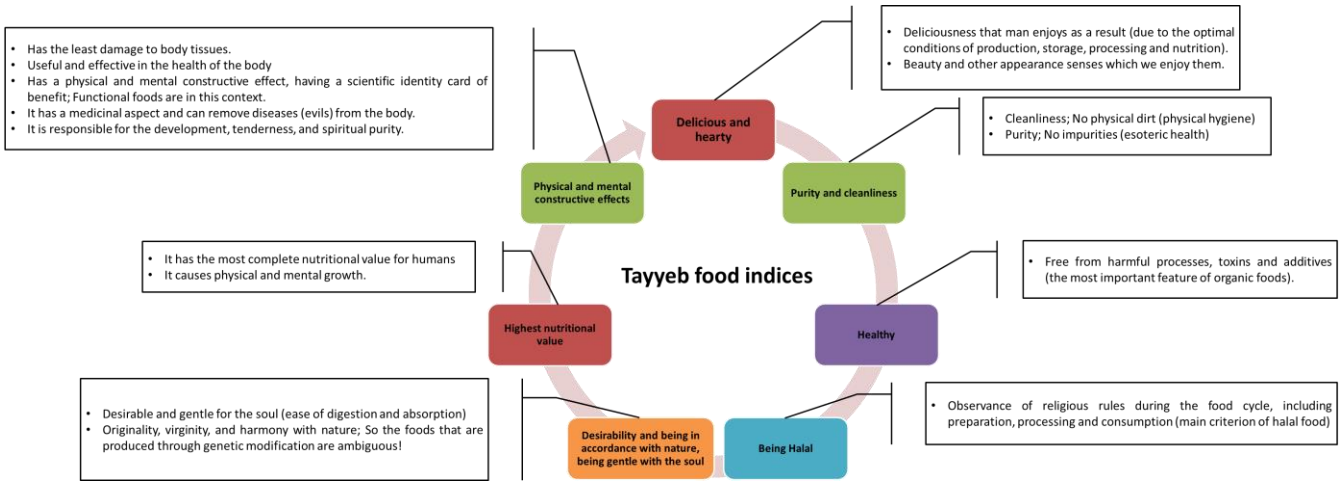

Figure 1. Tayyeb food indices

Monitoring the production of Tayyeb rice, from the farm to consumption

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Arbstract

Introduction: Issues such as food quality, health and safety are always important issues at the international level. Today, in the world, they have been able to minimize the entry of microbial and chemical pollutants in food and maximize the safety of products by using different safety and quality assurance systems. Since rice is a strategic product in Iran and, it is the main food of the people after bread, it is expected that this product will be supplied with suitable quality and placed in the household basket. From Tayyeb's point of view, a food item or product such as rice should be delicious and hearty, clean and pure, healthy, halal, desirable and in accordance with nature, agreeable to the breath, have the highest nutritional value and have no harmful effects. One of the requirements for the quality of food is the Halal criterion, and the purpose of this study is to investigate the dimensions of this criterion in the production of Tayyeb rice.

Materials and methods: Factors affecting the quality of rice during the production to consumption process were investigated by reviewing scientific sources and laws, quality control standards. Evaluation of Tayyeb rice production was done by evaluation teams using evaluation forms. Based on this, under the principle of being halal, a number of components and under each of the components, a number of indicators for the rice chain were extracted.

Findings and conclusions: The process of the rice production chain to consumption includes six general stages before harvesting, planting, holding, harvesting, after harvesting and finally supply, which if the principles, rules, limits and legal and Shariah rights are also in the process, it followes, the halal criterion and it has a high capacity to become a Tayyeb food. Checklists for evaluating the quality and ranking of the production and consumption of Tayyeb rice within the scope of Halal principle include checking the indicators of seed quality, treasury quality, cultivation quality, transportation and processing and warehousing, packaging and distribution. Also, in some cases, the requirements of each department and recommendations to help achieve those requirements are provided.

Keywords: Halal, Tayyab, rice, production chain to consumption, quality

The benefits of using probiotics in Tayyeb food

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Abstract

Nowadays, the importance of diet on physical and mental health has been proven in many researches. In addition, God has repeatedly emphasized the importance of nutrition and the attention of humans to the type of food consumed in the Holy Book of the Qur'an. So that he says in many verses, "Eat from what God has provided for your sustenance, which is halal and tayyeb." The use of the word Tayyeb next to food is repeated in many verses and has a higher meaning than the word Halal, which, in addition to considering being Halal, has a special view on the aspects of organicity, safety, health, quality and functional food. In fact, Tayyeb food has all the aspects of halal food, organic food, functional and healthy food. Considering that the importance of using probiotics as beneficial microorganisms living in the intestine has been proven in the improvement and prevention of many diseases, and also the placement of probiotic foods in the group of functional foods, their use in food Tayyeb is recommended with the aim of improving its health and safety index. The purpose of this study is to review the capabilities of probiotic microorganisms including antimicrobial, antioxidant, antihypertensive and anticancer activity after being used in dairy foods.

Keywords: probiotic, anticancer activity, antimicrobial, antioxidant, antihypertensive.

Examining the challenges of wheat production in the field in order to increase the quality of the product

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Abstract

Cereals are one of the first foods known to mankind, which since ancient times have always played a very important role in the economy and nutrition of the people of the world, especially in developing countries, and for this reason, the symbol of cereals, i.e wheat and bread, is always among religions. And different cultures of the world have enjoyed sacredness and precious dignity. It can be said that bread is the most common food product on the table of the people of the world and it is considered a symbol of blessing and has a special place and respect among food items. One of the necessities of realizing national goals and policies in the field of wheat self-sufficiency and its continuation is to examine the challenges in different stages of wheat production and harvesting and try to solve these problems. Therefore, one of the important goals of Iran is to enable and provide the necessary platform to actively deal with the issue of sustainable production and supply the wheat needed by the country by using modern technology to increase the production to the level of the country's needs. In this analytical study, the existing challenges in the field of wheat production in the field at different stages, harvest and after harvest, as well as the existing problems in terms of environmental and human factors, and practical solutions to reduce and solve these problems and increase Quality wheat production was presented.

Keywords: Bread, Farm, Challenge, Production, Solution

Evaluation of the color change kinetics during foam-mat drying of spinach

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Abstract

Drying is one of the processing methods of agricultural products to increase storage time. In this research, the color changes of spinach foam were compared at four different drying temperatures (40, 50, 60 and 70 °C) and two thicknesses (3 and 5 mm). Experiments were carried out in hot air flow dryers and a chamber for imaging by a camera. The results showed that L and B parameters decreased with increasing drying temperature. The green color of the samples decreased at high drying temperatures. In the thickness of 5 mm, the changes in these parameters were more than in the thickness of 3 mm. The results showed that due to the changes in LAB parameters, the ΔE also increases with increasing temperature. By examining the changes in the color parameters, it was observed that a high drying temperature is not suitable due to causing undesirable changes; on the other hand, a low drying temperature is unsuitable due to a long processing time and reduced efficiency.

Keywords: Spinach, foam mat drying, color change kinetics

Effects of Whey Protein Concentrate on Glycemic Status, Lipid Profile and Blood Pressure in Overweight/obese Women with Type 2 Diabetes Mellitus: A Randomized Placebo Controlled Clinical Trial

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Abstract

Objectives: Due to the insufficient data on the metabolic consequences of long-term whey protein (WP) consumption, in this trial we aimed to examine the effects of WP, as fortified bread, on glycemic status, lipid profile and blood pressure in overweight/obese women with type 2 diabetes mellitus (T2DM).

Methods: In a 12-week double-blind placebo-controlled randomized clinical trial, 48 overweight/obese women with T2DM were randomly allocated into either WP (bread fortified by 20 g WP concentrate) or placebo (unfortified bread) group. At pre- and post-intervention phase, physical activity, blood pressure, serum levels of glucose, insulin, glycosylated hemoglobin A1C (HbA1C), and lipid profile as well as dietary intakes were assessed. The homeostatic model assessment for insulin resistance (HOMA-IR) was used for estimation of insulin resistance.

Results: Thirty five patients completed the trial. At the endpoint, there were no significant between-group differences for the assessed glycemic parameters ($p > 0.05$), except HbA1C, which was higher in the WP group after adjusting for the confounders and baseline values ($p < 0.05$). Fasting blood glucose was significantly increased in WP group ($p < 0.05$). There was a significant increase in HOMA-IR and serum level of insulin in both WP and placebo groups ($p < 0.05$). There were no significant within- or between- group changes for lipid profile and blood pressure of the patients ($p > 0.05$).

Conclusion: Three month consumption of the WPC fortified bread, has no effects on lipid profile and blood pressure. It may cause some undesirable changes in some glycemic indices among overweight/obese women with T2DM.

Keywords: Whey Proteins, Diabetes Mellitus, Lipids, Blood Pressure

Introduction

Diabetes mellitus (DM) is a group of diseases characterized by protracted high levels of blood glucose (1). It is estimated that about 425 million adults around the world have DM and it is likely to about 629 million people aged 20-79 years develop DM in 2045 (2). Because of chronic complications of DM (microvascular and macrovascular complications), glycemic control is vital for patients with DM (3-5).

Regarding the chronic nature of the disease, side effects of some hypoglycemic pharmacologic agents, and progressive tissue damage due to the poor control of diabetes; the researchers are motivated to seek remedies in alternative and traditional medicine that have milder toxicity than available synthetic drugs. Natural products from various sources, such as plants, functional foods, micronutrients, and various supplements, tend to be potential candidates for the prevention or treatment of diabetes mellitus and its related complications (6-14).

Medical nutrition therapy is a part of diabetes care (15). Some dietary factors such as whey protein (WP) has both insulinotropic and glucose lowering effects in healthy subjects and patients with type 2 diabetes mellitus (T2DM) (16-18). WP and casein comprises about 20% and 80% of the total protein in cow milk, respectively. β-lactoglobulin, α-lactalbumin, glycomacropeptide (GMP), lactoferrin, Immunoglobulins, bovine serum albumin and lactoperoxidase are components of WP (19). Whey which is produced in cheese making process as a by-product, recognized as a functional food (20). Whey protein concentrates (WPCs) and whey protein isolates (WPIs) with 35-85% and > 90% protein contents, respectively, and whey protein hydrolysate (WPH) which consists of proteins that are hydrolyzed by proteolytic enzymes are different forms of WP (19, 21).

Some studies showed that WP can reduce postprandial blood glucose (16, 22). A systematic review of the acute (with less than one week) intervention studies on the effects of dairy foods and dairy proteins (casein and WP) in the management of T2DM concluded that despite beneficial effects of dairy foods and dairy proteins in T2DM care and glycemic control in acute interventions, long-term studies are needed (23). In another review study, Stevenson et al. reported the improvement of glycemic control in obese, overweight, and normal weight subjects and patients with T2DM after acute WP supplementation, but they suggested further long-term intervention studies for considering WP supplementation as a therapeutic method (24).

Some studies showed that WP supplementation can reduce the serum levels of total cholesterol (TC), triglyceride (TG), and low-density lipoprotein cholesterol (LDL-C) in obese and overweight subjects and patients with T2DM (25, 26). Fekete et al. reported that WP lowers blood pressure (BP) and improves lipid biomarkers in adults with prehypertension and mild hypertension (3). Some other studies also showed beneficial effects of WP supplementation on high BP (27, 28).

Given the insufficient long-term clinical trials on the effects of WP on glycemic control, we conducted this 12-week randomized clinical trial (RCT) for examining long-term effects of the fortified bread by WPC on indices of glycemic control, lipid profile and blood pressure among overweight/obese women with T2DM. Considering the probable desire of patients or healthy subjects to consumption of natural compounds as a part of diet instead of powdered or capsulated supplements and with attention to the bread as a staple food of Iranians and also for increment of our intervention's applicability, we administered WP as whole wheat bread fortified with WPC.

Materials and methods

Study design and subjects

The study was a double-blind, placebo-controlled RCT for 12 weeks (90 days), conducted between 2019 June to 2020 March. The patients were recruited from polyclinics, healthcare centers and outpatient clinics of Tabriz University of Medical Sciences in Tabriz, Iran. Forty eight overweight/obese women with T2DM aged 25-55 years and with a body mass index (BMI) of 25-40 kg/m^2 were initially enrolled.

The exclusion criteria were as follow: inflammatory, immunologic, pulmonary and neoplastic diseases; uncontrolled thyroid, kidney or liver disorders; malabsorption diseases such as ulcerative colitis or Crohn's disease; taking non-steroidal anti-inflammatory drugs, and glucocorticosteroid or hormonal drugs; use of insulin; any change in type or dose of administered drugs, and change in diet or physical activity (PA) during the intervention period; pregnancy, breast feeding and menopause; smoking; allergy or intolerance to milk components. Written informed consent was obtained from each participant and basic characteristics including demographic information and disease history were obtained from all patients. The primary outcomes of this study were changes in parameters of glycemic control. The secondary end-points were changes in lipid profile and BP.

This study was approved by the Ethics Committee of Tabriz University of Medical Sciences, Tabriz, Iran (ethics code; IR.TBZMED.REC.1397.687). This research was conducted according to the Declaration of Helsinki. The study was registered in the Iranian Registry of Clinical Trials (http://www.irct.ir, Registration Number: IRCT20110123005670N26).

Sample size

For determining sample size, mean (standard deviation [SD]) of fasting blood sugar (FBS) was used from a previous clinical trial (29), based on a confidence level of 95% and power of 90% in two-sided tests. The sample size was calculated 18 per group (WP and placebo groups) utilizing the Pockock formula, which was increased to 24, considering a probable about 30% dropout rate.

Randomization and intervention

A research assistant (the first author) randomly allocated the patients in a 1:1 ratio to either the WP or placebo group. The sequence of the randomization was generated utilizing the Random Allocation Software, considering

randomized block procedure of size 2 [BMI (≤ 32 kg/m^2 vs. > 32 kg/m^2) and age (≤ 40 years vs. > 40 years)]. The intervention allocation was blinded for participants and statistician as well as investigators other than the first author. Based on the previous RCTs on WP supplementation (30-32) and considering a desirable formulation for whole wheat flat bread which was fortified with WPC for this research, 20 g WP (WPC 80 instant; Sachsenmilch Leppersdorf GmbH, 01454 Leppersdorf, Germany) was used for fortification of each bread. In addition, achievement to a desirable formulation for the dough of whole wheat flour obliged us to use whole wheat flour (96% extraction rate) and white flour (82% extraction rate) in a ratio of 80:20, respectively. Patients in the WP group received one WPC fortified whole wheat flat bread (about 160 g) daily, while those in the placebo group received one whole wheat flat bread which was not fortified with WPC (about 125 g) for 12 consecutive weeks. The only difference between ingredients of breads was WPC; in each fortified brad, 20 g of flour was replaced with 20 g WPC. Notably, the difference in weight of fortified and unfortified breads was due to WPC and higher amount of water, which were used for the preparation of the fortified bread. Table 1 shows the macronutrient composition of both kinds of breads in detail. All breads were prepared by a reference bakery (Athar Nan, Tabriz, Iran); all steps of the preparation and baking process were done under supervision of the investigator (the first author). WPC fortified and placebo breads were provided to both groups every two weeks.

An experienced dietician designed low calorie diets for all patients according to the recommended dietary guidelines (1, 15) and based on individualized characteristics of each participant. For designing these low-calorie diets, total energy expenditure reduced depending on the individual characteristics and energy requirements of each patient. Macronutrient distribution in planned low- calorie diets was not identical. For increasing PA, walking for at least 30 minutes a day was recommended for all of the patients. The monitoring of patients was every two weeks.

Anthropometric and blood pressure measurements

One trained nutritionist performed the anthropometric measurements at baseline and after 12 weeks. The participants' height and weight were measured with a calibrated stadiometer and scale (Seca, Hamburg, Germany) to the nearest 0.1 cm and 0.1 kg, respectively. BMI was calculated as weight (kg) divided by height squared (m^2). One trained laboratory assistant measured blood pressure by an aneroid sphygmomanometer and stethoscope in the morning of the test day, at baseline and endpoint. For more accurate assessment, at pre- and post-intervention phase, we measured blood pressure of each participant twice with a 5-minute interval and reported the average of two numbers.

Assessment of dietary intake and physical activity

Dietary intake was estimated by 24-hour recall at baseline and end of the intervention period. Collected data on dietary intake were analyzed using the Nutritionist IV software (First Databank, San Bruno, CA, USA) modified for Iranian foods. The PA of the patients was assessed by a validated international PA questionnaire-short form (IPAQ-SF) (33). Metabolic Equivalent of Task (MET) -minutes per week (MET-minutes/week) scores were calculated according to the guidelines for data processing and analysis of the IPAQ (34). According to these guidelines, those subjects achieving a minimum total PA of at least 600 MET-minutes/ week were considered to have a "moderate" PA level. The criterion for being classified as "high" PA level was achieving a minimum total PA of at least 3000 MET-minutes/ week. Those patients who did not meet the two above-mentioned criteria were considered to have a "low" PA level.

Laboratory assays

Following a 12-h overnight fasting, blood samples were collected in gel separator tubes (8 mL) and EDTA blood collection tubes (2 mL). Blood sampling was performed at 7:30-9:00 AM in the Research Laboratory of the Faculty of Nutrition and Food Sciences, Tabriz University of Medical Sciences, Tabriz, I. R. Iran. The blood was sampled from "median cubital vein". For separation of serum, blood samples collected in gel separator tubes were centrifuged at 2500 revolutions per minute (rpm) for 10 min at 25◦C. The serum samples of each participant were stored in six 0.5 mL micro-tubes at -80◦C. The enzymatic colorimetric method and commercial kits (Pars Azmoon Co., Tehran, Iran) were used for measurement of FBS, TC, TG, and high-density lipoprotein cholesterol (HDL-C) in serum. Serum LDL-C was calculated using Friedewald equation (LDL-C = TC – HDL-C – TG/5) (35). Enzyme-linked immunosorbent assay kit (Monobind, USA) was used for assessment of serum insulin concentration. Glycosylated hemoglobin A1C (HbA1C) was measured in whole blood samples collected in EDTA tubes, by auto-analyzer (Mindray Auto Hematology Analyzer) and using a commercial kit (BioRex Co., Tehran, Iran). The homeostatic model assessment for insulin resistance (HOMA-IR) was calculated via the following formula:

HOMA-IR = [fasting insulin (μIU/mL) × fasting glucose (mg/dL)]/405

Statistical analyses

Statistical analyses were performed by IBM SPSS Statistics software (IBM SPSS Statistics, Armonk, USA, version 26). Analyses were conducted on a per protocol (PP) approach. To assess the normality of the data distribution, Kolmogorov-Smirnov test was run. Independent samples t-test was used for assessing between-group differences at baseline. For assessing within-group changes, paired samples t-test was applied. Fisher's exact test was used for the assessment of between-group differences of categorical variables. Analysis of covariance (ANCOVA) test was used for comparing the two groups at the end of study. We adjusted the analyses for baseline values and confounding factors (i.e., age, diabetes duration, administered drugs, BMI, PA, and intake of energy and macronutrients). *P* values of <0.05 were considered statistically significant.

Results

General characteristics of trial and dropouts

Thirty five patients (18 in WP and 17 in placebo groups) completed the trial. The flowchart of the study is shown in Figure 1.

Demographic characteristics

As shown in Table 2, at baseline, there were no significant differences between the two groups for age, weight, height, BMI, education level, marital status, and PA level. The mean age of the participants was 44.00 years in the WP group, and 46.94 years in the placebo group.

Dietary intakes and physical activity

As shown in Table 3, intake of energy, protein, carbohydrate, and daily percent of energy from fat were significantly decreased in placebo group ($P < 0.05$). A significantly lower protein intake was observed in the placebo group, when compared with the WP group after adjusting for the confounders. There was a significant increase in daily percent of energy from protein and a significant decrease in carbohydrate intake in WP group ($P < 0.05$). Within- or between- groups' changes of the PA (MET-minutes/week) were not significant over the study period (Table 3).

Biochemical parameters and blood pressure

There was no significant difference between groups, for biochemical parameters and systolic blood pressure (SBP) as well as diastolic blood pressure (DBP) at baseline of the study (Table 4). As shown in Table 4, FBS was significantly increased in WP group ($P < 0.05$). A significantly higher HbA1C was observed in the WP group, when compared with the placebo group after adjusting for confounders and basal values. There was a significant increase in HOMA-IR and serum level of insulin in both WP and placebo groups. There were no significant within- or between- group changes for lipid profile, SBP, and DBP throughout the study (Table 4).

Discussion

Most of the previous clinical trials on WP supplementation examined the effects of short-term (less than one week) WP supplementation on glycemic control. We studied the long-term effects of WP in the more natural form of bread as a main food items. In present study, we found that daily intake of 20 g WP, as fortified bread, for 12 weeks had no beneficial effects on indices of glycemic control, lipid profile and blood pressure in overweight/obese women with T2DM. Regarding indices of glycemic control, consumption of the fortified bread with WPC had no beneficial effect and just led to a significant increase in HbA1C after adjusting for the baseline values and confounders.

Our results are inconsistent with most of the previous short-term interventional studies. Recently, McDonald et al. assessed the effects of WP supplementation by four test beverages in the morning of four test days, in adults with prediabetes (36). They reported that the lowest glucose area under the curve (AUC) for 0 to 180 minutes was after consumption of WP beverage containing 16.5 g WP. In another study, Jakubowicz et al. examined the effects of WP drink (consist of 50 g WPC and 250 ml water) for two test days in individuals with well-controlled T2DM; they showed lower glucose AUC (0-180 minutes) and higher insulin and C-peptide AUC (0-180 minutes) after WP consumption (30). Watson et al. assessed the effects of four different preloads in patients with T2DM and reported lower glucose AUC and higher insulin AUC after WP preload (containing 17 g WP) intake (32). Our results were in contrast with those short-term interventional trials which, showed improvement of glycemic control after WP supplementation. Those short-term intervention studies administered WP supplements in one or more test days (acute administration) and reported postprandial amounts of glycemic parameters, while we measured serum levels of glycemic parameters in fasting state. So it seems that the discrepancy between the findings of our study and mentioned studies might result from the differences in duration of intervention (acute or chronic administration) and measurement condition of glycemic parameters in serum (fasting or postprandial).

In addition to the length of intervention, another reason for the results discrepancies between our study with other ones may be due to the differences in type of fortified food.

There are a few long-term clinical trials which examined the effects of WP supplementation on glycemic control. In a 10-week intervention study, Gaffney et al. assessed the effects of a WPI beverage (containing 20 g WPI) in men with T2DM (37). Although they reported more reduction in FBS and HOMA-IR after consumption of WP beverage compared to the placebo, they showed likely and possible benefits on FBS, and possible and unclear benefits on HOMA-IR in the WP and control groups, respectively.

It is believed that PA is a remarkable factor concerning glycemic control and insulin sensitivity (38). Since the participants of Gaffney et al. study completed 45 high-intensity mixed-mode interval training (MMIT) sessions (27 cycling and 18 resistance training sessions) along with consumption of WP or placebo beverages, it seems that the high PA level of participants led to better outcomes for glycemic parameters in that study. In addition, the nutrients of foods which, were fortified with WP, could affect on metabolic characteristics of the WP.

In another long-term intervention study, Jakubowicz et al. examined the effects of three different types of breakfasts: whey breakfast diet (WBdiet), contained 42 g protein of which 28 g were whey at breakfast; protein breakfast diet (PBdiet), contained 42 g protein from various protein sources (eggs, tuna, and soy); and carbohydrate breakfast diet (CBdiet), contained 17 g soy protein at breakfast, in adults with T2DM for 12 weeks (29). They found that the greatest reduction in FBS and HbA1C was achieved in WBdiet compared to the PBdiet and CBdiet. They also reported that the insulin AUC in WBdiet group was higher than PBdiet and CBdiet groups. It is shown that weight loss can improve glycemic control and T2DM (39, 40). The differences between the findings of our study and Jakubowicz et al.'s study might be related to the higher dose of WP in WBdiet and a significant reduction in body weight which was observed in Jakubowicz et al. study. In addition, the HbA1C of our study's participants was in normal range at baseline, so no changes in this parameter after consumption of WPC fortified bread is expected.

Our findings were in agreement with the results of a 2-week crossover clinical trial among 22 patients with T2DM, which showed that WP supplementation (21 g WPI before breakfast and 21 g WPI before dinner) led to no significant differences in average glucose values (41). Our results were also consistent with the results of a 12-week before-after study, which assessed the effects of WP supplementation in 31 overweight or obese patients with T2DM or impaired fasting glucose (IFG) (42). In that 12-week trial, administration of 20 g WPI before lunch and 20 g WPI before dinner resulted in no significant change in glucose markers (glucose, insulin, HbA1c, and HOMA-IR).

The current study showed that consumption of the fortified bread with WPC led to no significant within- or between- group changes for lipid profile. Pal et al. conducted a 12-week intervention on overweight/obese individuals and demonstrated that WP supplementation significantly lowered fasting lipids (25). The higher dose of WP and non-diabetic condition for participants of Pal et al. study are probably related reasons for differences between the findings of our study and that study. In other hand, the amounts of lipid profile in participants of our study were in normal range at baseline, so it is expected that these parameters would not differ after consumption of the fortified bread by WPC. Our findings were also in contrast with the results of two review studies which, showed that WP have beneficial effects on lipid profile (43, 44). It seems that high doses (45-75 g) of WP that were used in studies, which were assessed in those two reviews, might be the reason of this discrepancy. In a recent 3-month intervention study, Derosa et al. administered WPI for individuals with T2DM and found that TG, TC, and LDL-C decreased in the WPI group (26). The discrepancies between the results of our study and Derosa et al. study might be resulted from the difference in dose of WP.

In the present study, we found that consumption of the fortified bread with WPC resulted in no significant within- or between- group changes for SBP and DBP of the participants. In an acute intervention study, Fekete et al. showed that WP supplementation reduced postprandial SBP compared with Ca-caseinate and maltodextrin up to 5 h post-ingestion, in mildly hypertensive adults, but there was no significant change in postprandial DBP (27). Regarding DBP, our result was in line with, while concerning SBP; it was in contrast to the Fekete et al. study. This discrepancy between the findings might be related to the differences between the duration of our study (12-week intervention) and Fekete et al. study (acute intervention). In addition, the SBP and also DBP in participants of our study were in normal range at baseline which may be the reason of no significant change of BP in our study, while the participants of Fekete et al. study were mildly hypertensive adults. Our findings were in line with the results of Yang et al. study on pre- and mildly hypertensive adults. They showed that consumption of 30 g/day WP for 12 weeks led to no significant change in SBP and DBP (28). Yang et al. also reported that SPB in WP group was significantly lower than control group, after dividing according to BMI. It seems that this finding might be resulted from the effect of body weight on blood pressure. Our results were also in agreement with the results of Flaim et al. study. They reported that supplementation with 40 g/day WPI for 12 weeks had no effect on SBP and DBP in patients affected by T2DM or IFG (42).

Strengths and limitations of the study

To the best of our knowledge, this study appears to be the first long-term RCT that used WP, as fortified whole wheat bread, for examining long-term effects of WP on indices of glycemic control, lipid profile and blood pressure among overweight/obese women with T2DM. A main strength of our study was that dietary plans were provided based on individual characteristics of each patient. In addition, for better monitoring and to increase the patients' motivation we visited the participants every two weeks. Our trial had some limitations including subjective assessment of dietary intakes which usually do not represent the real intake accurately. Considering a desirable formulation for whole wheat bread fortified by 20 g WPC, we had to recommend a bread which weighted about 160 g, for daily consumption; so the patients should not intake other kinds of bread during the intervention period and appears that this could have influenced the patients' adherence after a while. For achievement to significant effects on lipid profile, blood pressure and also HbA1C, it might was more desirable that cut offs were determined for these parameters at baseline.

Conclusion

Based on our findings, daily consumption of 20 g WPC, as fortified whole wheat bread, for 12 weeks had no significant beneficial effects on indices of glycemic control, lipid profile and blood pressure in overweight/obese women with T2DM. Long term consumption of fortified bread with WPC may cause some undesirable changes in some glycemic indices among overweight/obese women with T2DM. Further researches with including a control group not receiving any interventions except individualized calorie-restricted diets are recommended for more obviously clarify the probable beneficial effects of WP fortified bread's intake on metabolic parameters in individuals with T2DM.

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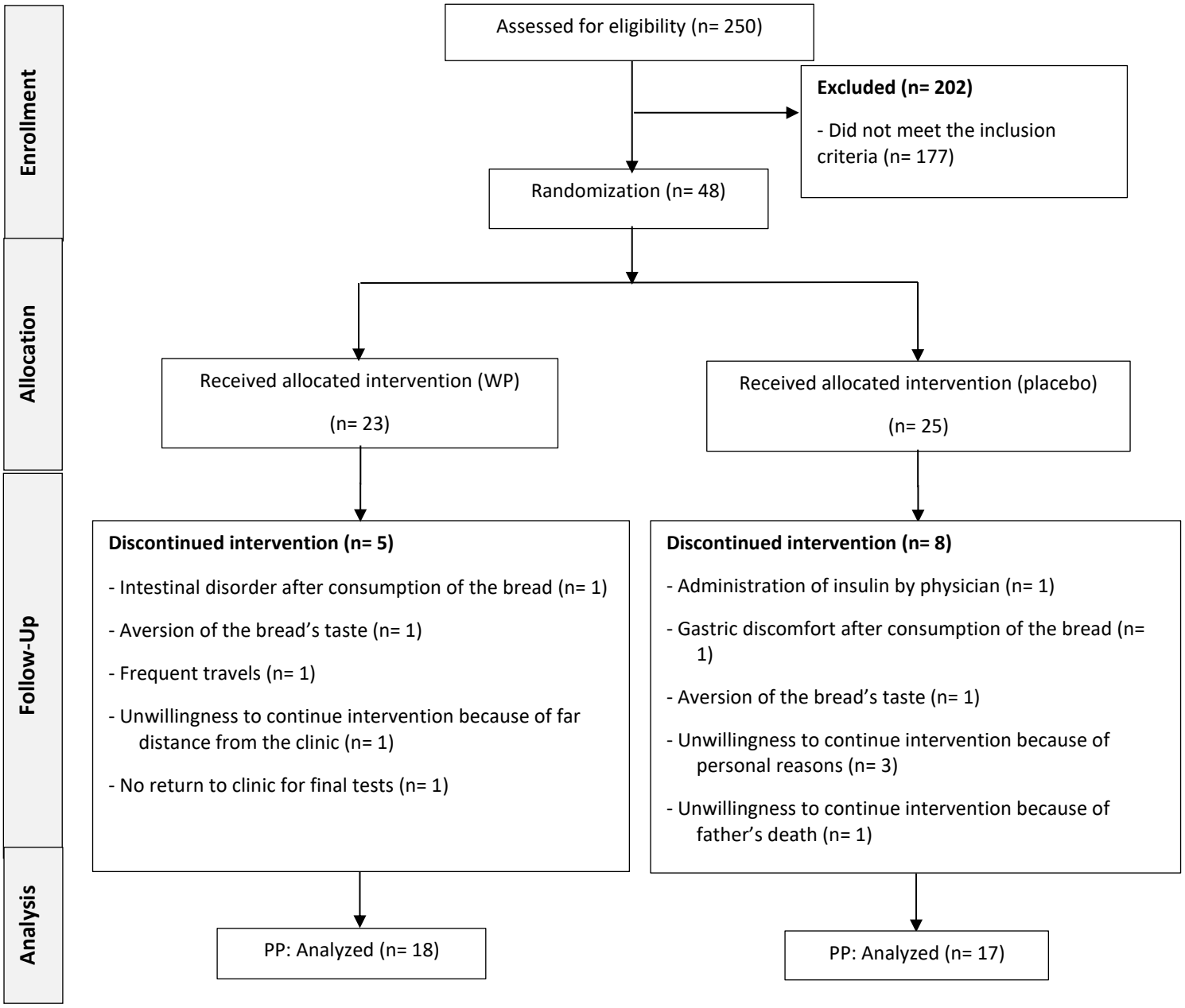

Figure 1. Study flow diagram. WP: Whey protein; PP: Per protocol.

Table 1. Composition of WPC fortified and unfortified breads.

Sample of bread	Energy (kcal/100 g)	Carbohydrate (g/100 g)	Protein (g/100 g)	Fat (g/100 g)	Fiber (g/100 g)
WPC fortified bread	223.7	37.72	14.02	1.86	5.37
Unfortified bread	251.91	50.14	8.9	1.75	6.14

WPC: Whey protein concentrate

Table 2. Baseline characteristics of the study participants.

	WP (n = 18)	Placebo (n = 17)	*P*
Age (years)	44.00 (6.29)	46.94 (5.17)	0.142[a]
Weight (kg)	81.88 (12.84)	80.01 (16.05)	0.706[a]
Height (cm)	158.61 (7.70)	158.41 (6.44)	0.935[a]
BMI (kg/m^2)	32.54 (4.26)	31.66 (5.04)	0.579[a]
Marital status			
Single	1 (5.55)	1 (5.88)	1.000[b]
Married	16 (88.88)	15 (88.23)	
Divorced or widow	1 (5.55)	1 (5.88)	
Education			
Illiterate	1 (5.55)	0 (0.0)	0.562[b]
Diploma and lower	14 (77.77)	12 (70.58)	
Bachelors and higher	3 (16.66)	5 (29.41)	
Physical activity level			
Low (PA < 600 MET-minutes/ week)	7 (38.88)	6 (35.29)	0.896[b]
Moderate (PA ≥ 600 MET-minutes/ week)	7 (38.88)	7 (41.17)	
High (PA ≥ 3000 MET-minutes/ week)	3 (16.66)	4 (23.52)	
Drugs for glycemic control (Metformin, Diabezide)	18 (100)	17 (100)	
Drugs for dyslipidemia (Atorvastatin)	9 (50)	10 (58.82)	
Drugs for hypertension (Lozar)	7 (38.88)	7 (41.17)	

WP: Whey protein; BMI: Body mass index; PA: Physical activity.

Age, weight, height, and BMI are presented as Mean (SD); PA level and drugs use are presented as number (%). In the case of drug use, total number of participants using that drugs are presented.

[a] Independent samples t-test.

[b] Fisher's exact test.

Table 3. Daily dietary intakes and PA of the study participants throughout the study.

Variable	Period	WP (n = 18)	Placebo (n = 17)	MD (95% CI), *P*
Energy (Kcal)	Baseline	1673.14 (679.45)	1808.47 (559.88)	-19.50 (-551.63, 512.62), 0.941[b]
	End	1469.12 (669.76)	1349.57 (463.66)	151.27 (-203.84, 506.39), 0.392[c], 0.164[d]
	MD (95% CI), *P*[a]	-204.02 (-587.31, 179.26), 0.276	- 458.89 (-700.83, -216.95), 0.001	
Protein (g)	Baseline	60.73 (27.40)	68.47 (18.04)	7.74 (-8.31, 23.80), 0.334[b]
	End	62.14 (30.96)	51.46 (19.83)	13.13 (- 4.67, 30.95), 0.143[c], 0.015[d]
	MD (95% CI), *P*[a]	1.41 (-15.91, 18.73), 0.865	-17.01 (-28.88, -5.13), 0.008	
Protein (Percent of energy)	Baseline	13.55 (3.43)	15.23 (2.92)	1.67 (- 0.52, 3.88), 0.130[b]
	End	16.33 (2.78)	15.00 (2.91)	1.39 (- 0.66, 3.46), 0.178[c], 0.222[d]
	MD (95% CI), *P*[a]	2.77 (0.74, 4.81), 0.010	- 0.23 (-2.44, 1.97), 0.824	
Carbohydrate (g)	Baseline	303.52 (142.66)	318.45 (101.84)	14.93 (-70.77, 100.63), 0.725[b]
	End	234.94 (97.94)	221.46 (74.54)	18.52 (-35.15, 72.20), 0.487[c], 0.584[d]
	MD (95% CI), *P*[a]	- 68.58 (-134.44, -2.72), 0.042	- 96.99 (-141.51, -52.47), < 0.001	
Carbohydrate (Percent of energy)	Baseline	65.94 (9.57)	69.11 (7.49)	3.17 (-2.76, 9.11), 0.285[b]
	End	62.61 (8.00)	64.64 (6.66)	-1.59 (- 6.78, 3.58), 0.535[c], 0.743[d]
	MD (95% CI), *P*[a]	-3.33 (-8.27, 1.61), 0.173	- 4.47 (-10.07, 1.12), 0.110	
Fat (g)	Baseline	37.94 (22.58, 58.87)	29.06 (17.49, 40.54)	- 0.08 (- 0.28, 0.10), 0.368[b]
	End	31.98 (18.61, 68.19)	26.78 (18.72, 45.79)	- 0.005 (- 0.17, 0.16), 0.950[c], 0.376[d]
	MD, *P*[a]	-5.96, 0.439	-2.28, 0.945	
Fat (Percent of energy)	Baseline	20.50 (9.06)	15.64 (6.14)	- 4.85 (-10.21, 0.50), 0.74[b]
	End	21.05 (8.03)	20.35 (5.40)	-1.08 (-5.68, 3.50), 0.633[c], 0.417[d]

Table 3. Daily dietary intakes and PA of the study participants throughout the study.

Variable	Period	WP (n = 18)	Placebo (n = 17)	MD (95% CI), *P*
	MD (95% CI), *P*[a]	0.55 (-3.67, 4.78), 0.785	4.70 (0.94, 8.46), 0.017	
Fiber (g)	Baseline	14.56 (10.01, 22.10)	15.43 (10.94, 28.74)	0.05 (- 0.12, 0.23), 0.539[b]
	End	18.62 (10.36, 22.08)	13.58 (7.83, 24.39)	0.009 (- 0.17, 0.19), 0.925[c], 0.935[d]
	MD, *P*[a]	4.06, 0.837	-1.85, 0.355	
PA (MET-minutes/week)	Baseline	685.50 (267.50, 2571.00)	840.00 (259.00, 2939.75)	0.12 (- 0.61, 0.86), 0.732[b]
	End	1071.00 (329.00, 2338.87)	1077.00 (675.00, 1968.00)	- 0.06 (- 0.38, 0.26), 0.709[c], 0.397[d]
	MD, *P*[a]	385.5, 0.374	237, 0.336	

WP: Whey protein; PA: PA; METs: Metabolic equivalent tasks (MET-minutes/ week.)

Mean (SD) and Mean difference (95% CI) are presented for normally distributed data; Median (25^{th} and 75^{th} percentiles) and median differences are presented for data not normally distributed (fat, fiber, and PA). Not normally distributed data are analyzed after log transformation.

[a] Paired samples t-test.

[b] Independent samples t-test.

[c] ANCOVA test, adjusted for baseline values (Model 1).

[d] ANCOVA test, adjusted for baseline values, age, diabetes duration, drugs, changes in BMI, intake of energy and macronutrients and PA (Model 2).

Table 4. Biochemical parameters and blood pressure of the study participants throughout the study.

Variable	Period	WP (n = 18)	Placebo (n = 17)	MD (95% CI), *P*
FBS (mg/dl)	Baseline	154.50 (73.02)	127.82 (32.03)	-26.67 (- 65.87, 12.51), 0.175[b]
	End	178.50 (67.78)	131.35 (55.26)	24.27 (-3.25, 51.80), 0.082[c], 0.452[d]
	MD (95% CI), *P*[a]	24.00 (4.37, 43.62), 0.019	3.52 (-16.38, 23.44), 0.712	
HbA1C (%)	Baseline	6.38 (1.46)	5.71 (1.00)	- 0.67 (-1.54, 0.19), 0.123[b]

Table 4. Biochemical parameters and blood pressure of the study participants throughout the study.

Variable	Period	WP (n = 18)	Placebo (n = 17)	MD (95% CI), *P*
	End	7.26 (1.89)	5.98 (1.17)	0.87 (- 0.14, 1.88), 0.090[c], 0.034[d]
	MD (95% CI), *P*[a]	0.87 (- 0.06, 1.80), 0.066	0.27 (- 0.18, 0.73), 0.224	
Insulin (µIU/mL)	Baseline	22.45 (5.75, 34.50)	16.30 (4.80, 31.80)	- 0.05 (- 0.35, 0.24), 0.697[b]
	End	44.30 (35.50, 50.95)	38.30 (31.50, 54.90)	0.006 (- 0.13, 0.14), 0.924[c], 0.484[d]
	MD, *P*[a]	21.85, 0.004	22.00, 0.001	
HOMA-IR	Baseline	6.92 (2.35, 11.59)	5.31 (1.49, 9.54)	- 0.11 (- 0.40, 0.18), 0.454[b]
	End	20.45 (10.60, 28.00)	11.94 (8.64, 19.27)	0.14 (- 0.03, 0.32), 0.116[c], 0.168[d]
	MD, *P*[a]	13.53, 0.001	6.63, 0.002	
TG (mg/dl)	Baseline	149.22 (57.97)	138.64 (53.94)	-10.57 (- 49.14, 27.99), 0.581[b]
	End	179.33 (80.91)	157.88 (76.52)	10.83 (-27.95, 49.63), 0.573[c], 0.406[d]
	MD (95% CI), *P*[a]	30.11 (-2.92, 63.14), 0.071	19.23 (-1.29, 39.76), 0.064	
TC (mg/dl)	Baseline	151.05 (32.46)	145.64 (35.59)	-5.40 (-28.81, 17.99), 0.641[b]
	End	165.61 (48.36)	141.29 (36.65)	22.28 (- 6.59, 51.17), 0.126[c], 0.130[d]
	MD (95% CI), *P*[a]	14.55 (-5.58, 34.69), 0.146	- 4.35 (-30.98, 22.27), 0.733	
HDL-C (mg/dl)	Baseline	45.44 (8.61)	42.76 (10.48)	-2.67 (-9.26, 3.90), 0.413[b]
	End	50.50 (11.76)	45.35 (11.16)	4.05 (-3.57, 11.68), 0.287[c], 0.489[d]
	MD (95% CI), *P*[a]	5.05 (- 0.83, 10.94), 0.088	2.58 (-3.85, 9.03), 0.407	
LDL-C (mg/dl)	Baseline	77.89 (25.05)	78.98 (29.36)	- 0.63 (-19.58, 18.30), 0.946[b]
	End	85.24 (36.86)	67.01 (32.86)	12.22 (-12.29, 36.73), 0.318[c], 0.392[d]
	MD (95% CI), *P*[a]	3.47 (- 11.74, 18.70), 0.636	- 8.37 (- 31.68, 14.93), 0.457	

Table 4. Biochemical parameters and blood pressure of the study participants throughout the study.

Variable	Period	WP (n = 18)	Placebo (n = 17)	MD (95% CI), *P*
SBP (mmHg)	Baseline	120.00 (13.71)	116.61 (14.97)	-3.38 (-13.24, 6.48), 0.490[b]
	End	116.02 (19.91)	115.29 (12.08)	- 0.714 (-11.57, 10.14), 0.894[c], 0.674[d]
	MD (95% CI), *P*[a]	-3.97 (-13.29, 5.35), 0.381	-1.32 (- 9.53, 6.88), 0.737	
DBP (mmHg)	Baseline	74.27 (8.58)	72.76 (3.19)	-1.51 (- 6.01, 2.99), 0.499[b]
	End	72.86 (4.37)	71.73 (3.37)	1.11 (-1.64, 3.87), 0.417[c], 0.787[d]
	MD (95% CI), *P*[a]	-1.41 (- 6.13, 3.30), 0.535	-1.02 (-3.50, 1.44), 0.391	

WP: Whey protein; FBS: Fasting blood sugar; HbA1C: Glycosylated hemoglobin A1C; HOMA-IR: Homeostatic model assessment for insulin resistance; TG: triglyceride; TC: total cholesterol; HDL-C: High-density lipoprotein cholesterol; LDL-C: Low-density lipoprotein cholesterol; SBP: Systolic blood pressure; DBP: Diastolic blood pressure.

Mean (SD) and Mean difference (95% CI) are presented for normally distributed data; Median (25^{th} and 75^{th} percentiles) and median differences are presented for data not normally distributed (insulin, HOMA-IR). Not normally distributed data are analyzed after log transformation.

[a] Paired samples t-test.

[b] Independent samples t-test.

[c] ANCOVA test, adjusted for baseline values (Model 1).

[d] ANCOVA test, adjusted for baseline values, age, diabetes duration, drugs, changes in BMI, intake of energy and macronutrients and PA (Model 2).

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Reduction of the phytic acid of wheat bran and adding it to Barbari bread (Production of healthy bread)

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Abstract

Bread and bakery products play the most important role in the nutrition of society. These products provide most of the calories and compounds needed by the body. Whole meal breads have higher percentage of minerals, protein and vitamins and higher digestibility. However, adding bran to flour and bread is doubtful due to the presence of a significant amount of phytic acid, which prevents the absorption of important mineral (iron, calcium, zinc, etc.). Also, the aim of this study soaking wheat bran (6 and 18 hours) in water, and adding sourdough (5 and 10 %) or malt powder (2 and 4%) were tested for their effects on reducing phytic acid. Results showed that all treatments significantly reduced phytic acid in dough and bread over the control. The lowest and highest phytic acid contents were for 4% malt powder and the control, respectively. The use of 4% malt powder, however, damaged bread quality, thus, 10% sourdough and 2% malt powder were selected as the best treatments.

Keywords: Wheat bran, Phytic acid, Soaking, Sourdough, Malt powder.

A review of pistachio drying methods and their effect on increasing shelf life and reducing fungal contamination

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Abstract

Drying is defined as a process of removing moisture through simultaneous heat and mass transfer. Heat transfer from the surrounding environment to the food leads to the evaporation of moisture from the surface. The drying process leads to increasing the shelf life of the product, reducing transportation and storage costs, supplying the product outside the production season, etc. Drying is an important step in pistachio processing, and during this process, the 40% moisture content of fresh pistachios is reduced to about 4-6%. The most common challenge of pistachio is its contamination with some fungi and their toxic metabolites during the pistachio growth and post-harvest stage, which ultimately leads to the production and accumulation of aflatoxin in the pistachio nuts. The drying time depends on various factors such as the temperature of the drying air, the relative humidity of the environment, the initial humidity of the pistachios, the drying stage and the drying method. It is important to choose the proper method for drying this high-use and valuable product, among which the effect of temperature is greater than other parameters on the quality characteristics of the final product.

Keywords: Pistachio, Drying, Quality characteristics, Fungal contamination.

Halal detection of Emulsifier using PCR test

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Abstract

Emulsifiers are used in the food, pharmaceutical, cosmetic and health industries extensively, which are derived from vegetable and animal sources. Nowadays, lard is commonly used due to its low cost, high availability and improved food quality. On the other hand, according to global statistics, the consumption of halal food has grown significantly in Islamic and non-Islamic countries at present. Therefore, it is very important to determine the halal origin. So, the PCR method used to identify the emulsifiers origin in this research for the first time in Iran. Our results confirmed that it is a precise, fast and high accuracy technique to halal confirmation of emulsifiers. Consequently, it can be used as a powerful technique in determining the solubility of these products for halal labeling.

Keywords: “Halal”, “PCR test”, “Emulsifier”, “Pig”.

Solar Collector Design Procedure for Saffron Drying and Its Relationship with the Tayyib Principles

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Abstract

Saffron stigma might be the most expensive crop in the world that the price of each pound is approximately 2500 dollars. Various methods are used for drying saffron and the quality of the final product depends on the drying method. One of the most appropriate methods is use the solar dryer, which, in addition to the desired quality of the final product, The use of electrical energy and other non-renewable energies is eliminated that these two goals are both in line with Tayyib principles (blessing and health). The most important component in a solar dryer is the Solar Collector. In this article, the solar collector is designed according to the desired product (saffron stigma). This design aims to increase energy efficiency and complete drying operations. Finally, according to the calculations in this article, the efficiency of the designed collector was 42%, which is appropriate considering the efficiency of similar solar collectors.

Keywords: Saffron, drying of saffron, solar dryer, solar collector.

Enzymes and genetically modified organisms (GMO) for production of halal foods: the perspective of Islam and present challenges

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Abstract:

The Quranic word of halal means legal or permissible, and the halal guarantee should be considered from the farm to the table. One of the most important challenges of the halal food industry are enzymes extracted from animal sources. Enzymes must be extracted from a halal source of meat with Islamic slaughter, and all their production steps must be in accordance with Islamic law. Enzyme extraction from animal sources has 5 critical control points (CCP) that must be carefully considered. The animal enzyme used for the production of peptides and hydrolysates, whether the substrate is of plant or animal origin, must be extracted from a halal meat animal. Otherwise, these products are not allowed as functional ingredients in Muslim food products. Genetically modified organisms (GMO) are new products that are not directly discussed in the Quran. However, if a product is produced by transferring genes from a haram meat animal such as a pig to any other source, such as microorganisms, plant cells, or halal meat animals, it is forbidden for Muslims to consume. For example, consumption of pesticide-resistant rice which was produced by transferring pig genes is not permissible for Muslims. However, the issue of transformation in the field of GMO products is one of the challenging debates between scientists and Islamic scholars. Therefore, considering the importance of halal food production, currently the best way to produce GMO products is to use a fully synthetic gene and transfer it to the final cell to produce a product free of any type of pig gene in the whole production process.

Keywords: enzyme , halal, genetically modified organisms, pork

B3- Fiqh and Sharieh

Meta-synthesis of the semantic studies of Tayyib in the Holy Quran

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Abstract:

Tayyib is one of the words that has been used a lot in the Holy Quran and Islamic traditions. Islamic scholars and scholars have long spoken about its meaning in their interpretive and jurisprudential works. But in the last decade, the growing interest of scientists and researchers in recognizing the meaning of Tayyib has increased, especially in the Holy Quran, so various articles, books, and dissertations on its semantics have been written. It is natural that every researcher has made an effort on the semantics of Tayyib based on his own method. In the meantime, various views have been presented on the semantics of Tayyib, which in some cases have led to the confusion of other scholars, especially those who specialize in interdisciplinary studies of the Qur an and the humanities and natural sciences. In order to reduce this damage, in this article, an attempt has been made to examine the works produced on the semantics of Tayyib by the meta-combined method, and after triple coding and obtaining documented and valid analyzes, in a methodical and scientific manner, a comprehensive view. And the barrier to good semantics should be presented and the question should be answered what are the main elements and components of good semantics from the point of view of the Holy Quran based on the produced scientific works?

Keywords: Extracorporeal method, the semantics of Tayyib, Tayyib, elements of Tayyib, interpretation of the Holy Quran

Investigating the indicators of good food and the importance of these indicators in the Holy Quran

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Abstract

Introduction: Nutrition is one of the most vital processes of life, and based on Islamic principles, it plays a key role in ensuring the happiness of religion and the human world. From the point of view of the Islamic worldview, nutrition affects the human body, mind and faith. Therefore, the purpose of this study is to investigate the indicators of good food and the importance of these indicators in the Holy Quran
Search method: This study has been used in a review method and by searching in Iranian and international databases such as sid, Google Scholar, with related keywords and their English equivalents.
Findings: The Holy Quran has provided the highest standards in the field of health and food safety under the title of Tayyab to ensure the quality in terms of cleanliness, hygiene, safety, tonic and nutrition. The implementation of such advanced standards requires a correct understanding of the Qur'an, acquisition of modern knowledge, practical education and promotion of good culture. Good food is clean and formative food that is in complete harmony with the structure of the body and is enjoyable, according to taste, pleasant, and has a beneficial effect. And it is constructive for the body and soul, harmless and non-destructive. Good food is a symbol of purity, health, safety, organic and quality. Conceptually, good food is healthy and harmless food, halal, clean, suitable for the mood and without external and internal pollution.
Conclusion: According to the above, indexing based on the teachings of the Holy Quran is important in order to explain the Quranic theories of good food.

Key words: good food, Holy Quran, index

همایش بین المللی غذای طیب

International Conference onTayyeb Food

زمان برگزاری / Conference Date

۱۸-۱۹ آبان ۱۴۰۱ / November 9-10th , 2022

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- Producing and quality evaluation of food products
- Nutritional and healthful effects of Tayyeb food
- Effectiveness of food on society and the environment
- Developing culture for Tayyeb food consumption
- Reducing food waste
- Food fraud

فقه و شریعت ▪ Fiqh and Sharia

- جایگاه طیب در ادیان مختلف
- ویژگی‌های غذا از دیدگاه قرآن
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- The status of Tayyeb Food in different religions
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- Comparing Tayyab food criteria with halal and organic standards

آخرین مهلت ثبت‌نام و ارسال مقالات / Registration and Submission Date

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