

Developments and Regulations About Functional Foods in Turkey: A Literature Review

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ABSTRACT

The aim of this study is to define the functional food market in Turkey and to present the official regulations concerning the labeling, promoting and advertising of functional foods. This present study is based on literature studies reported previously. Functional food market is a new sector in Turkey. So far, significant progress has been made in terms of legislation regarding this sector but it has not been finished yet. Defining the relationship between functional foods and public health, the ways in which consumers are informed and the impact of media are the major fields of argument in Turkey. Functional foods are in the growing phase in Turkey. In developing countries like Turkey, when correct and appropriate information is not provided, consumers are likely to try to compensate for their unhealthy dietary habits by consuming "functional foods" and try to cure their diseases with these products. A functional food discourse without any ethical concern could cause nutritional science to be overlooked. While the functional food market is creating opportunities and creating potential positive impacts on human health, new communication technologies are also presenting possible new threats.

Keywords: Functional foods, Turkey, Health, Legal infrastructure

Türkiye’de Fonksiyonel Gıdalarla İlgili Gelişmeler ve Yasal Düzenlemeler: Bir Literatür Taraması

ÖZ

Bu çalışmanın amacı Türkiye’de fonksiyonel gıda pazarını tanımlamak ve gıdaların etiketlenmesi, tanıtılması ve reklamına ilişkin resmi düzenlemeleri sunmaktır. Bu çalışma literatür taramasına dayanmaktadır. Fonksiyonel gıda, Türkiye’de yeni bir sektördür. İlgili mevzuatın hazırlanmasında önemli ilerleme kaydedilmiştir, ancak henüz sonuçlandırılmamıştır. Fonksiyonel gıdalar ve halk sağlığı arasındaki ilişkinin, tüketicilerin bilgi alma şekillerinin ve medyanın etkisinin tanımlanması, ülkedeki başlıca tartışma alanlarıdır. Fonksiyonel gıdalar Türkiye’de büyüme aşamasındadır. Türkiye gibi gelişmekte olan ülkelerde, doğru bilgi verilmediğinde, tüketicilerin sağlıksız beslenme alışkanlıklarını “fonksiyonel gıdalar” tüketerek telafi etmeye ve bu ürünlerle hastalıkları iyileştirmeye çalışmaları olasıdır. Etik kaygılardan mahrum bir fonksiyonel gıda söylemi, beslenme biliminin göz ardı edilmesine neden olabilir. Fonksiyonel gıda pazarı fırsatlar yaratırken ve sağlık üzerine potansiyel pozitif etkiler oluştururken, yeni iletişim teknolojileri de olası yeni tehditler ortaya koymaktadır.

Anahtar Kelimeler: Fonksiyonel gıdalar, Türkiye, Sağlık, Yasal altyapı

INTRODUCTION

Factors such as technological developments, more accessible information sources, increase in consumers' knowledge level, changes in international commerce and improvement in life standards have contributed positively to individuals' lives in the past 50 years. On the other hand, inactivity due to modern life circumstances and malnourishment and/or poor nutrition resulted in many health problems. Increase in health problems, high treatment costs, workforce losses as well as people's expectations of a longer and better life brought health issues to the top of the agenda and caused people to be more sensitive towards health issues. Seeking for ways to be healthier, people's interest in dietary habits also rose and healthy nourishment started to be seen as the way to be healthy and protect health [1, 2].

The main focus of nutritional science in the beginning of twentieth century consisted of key elements such as supporting the physical development of the body [3, 4]. Changes in daily life practices also caused a change in people's expectation from food products. Nowadays, consumers demand food products with characteristics that will enrich their life and protect their health while catering to their basic nourishment needs. Consumer demand for diets containing healthy and essential ingredients have expanded the functional food market [5]. Constant increase in healthy diet awareness caused people to gravitate towards functional foods and supplemental foods. Therefore, functional foods, nutraceuticals and natural health products are being consumed increasingly more [6, 7].

The aim of this study is to define the functional food market in Turkey, present legislations, regulations, promotion and advertisement arrangements shortly, providing an actual perspective about functional foods in Turkey. Within a compilation framework, developments, current status and legal infrastructure in Turkey is reviewed and various suggestions that would serve as beneficial in the future are given.

Functional food concept refers to the food which, besides the nutritious values, possesses one or more effective components that serve to protect health, to heal and/or to reduce risk of illness, and whose aforementioned effects are proven scientifically and clinically [8-11]. In other words, foods that provide physiological benefits and/or can reduce chronic disease risk along with their nutritional values are called functional foods.

Functional foods can be unprocessed natural foods as well as foods that are enriched with a functional component or foods that are modified by genetic engineering and they can be consumed in daily diet. Names like health nutrients, medical nutrients, regulatory nutrients, special diet nutrients and pharmaceutical nutrients are also used instead of the term "functional food". The term functional food emphasizes that the food is related to health [9, 10].

Addressing the concerns about preventing chronic disease in an ageing population, research on functional foods has begun in Japan in the early 1980s. The term Functional Foods was introduced in order to update the terminology associated with fortified foods, to allow for new alleged health claims. Due to the expansion of the range of added ingredients and consequently their claimed health benefits, functional foods gained popularity in 1990s [11].

Gradually increasing scientific studies infer that food components (plant based ones are called phytochemicals and animal based ones are called zoochemicals) have beneficial effects on health and contribute to preventing illnesses such as cardiovascular diseases, cancer and osteoporosis. Functional foods can be foods that are consumed in their natural state in daily diet (tomato-lycopene) or foods whose components are changed (yoghurt-protein-bioactive peptide) or foods that are enriched in order to gain greater positive effects (egg that contains omega-3, iodized salt) [8, 9, 12].

In this study, the literature about the functional foods in Turkey was examined and a review concerning the subject is presented. Within the scope of the study, relevant literature, laws, announcements and regulations were evaluated. Limitations of this study consists of the facts that formal information about functional food in Turkey is almost non-existent, some food products are not regarded as functional foods in any kind of classification and statistics despite the fact that they are actually functional foods in terms of their content and quality, and some functional foods not being included in production and consumption data because they are produced at home.

In this study, it has come to attention that, with the significant impact of the media, demand towards many long-lost foods that have cultural and traditional value such as yoghurt, kefir, tarhana (tarhana or trahana is dried food ingredient based on a fermented mixture of grain and yoghurt or fermented milk found in the cuisines of Southeast Europe and Middle East. Dry tarhana has a texture of course, uneven crumbs, and it is usually made into a thick soup with water, stock or milk) and vinegar have increased and home-production with traditional methods has gained momentum. This situation infers that, apart from functional foods that are produced by the food industry in Turkey, even though the community does not know the concept, there are foods being produced with homemade methods due to the belief that they are beneficial to human health.

LEGAL INFRASTRUCTURE IN TURKEY

Definition/naming and historical background studies related to functional foods in Turkey follow developments in the world, particularly in the European Union. It is known that definition efforts came up because of the production of such products for mass market. Developments in the market still continues with the definition, naming and regulatory efforts [13-16].

With need arising from the onset of the market-oriented functional food production and functional food being under the scope of food industry, conceptualization studies concerning these products and legislation efforts in order to regulate the relevant industry and markets also started [6].

According to the European Union (EU) Functional Food Commission; for a food to be considered as functional food, along with its basic nutrient characteristics, it must be effective in improving human health and/or preventing diseases [17, 18]. Nowadays, because functional foods are thought to reduce negative effects of unhealthy life style and dietary habits and delay aging, they are consumed by many people and have become increasingly popular [19-22].

While there is not a common agreement upon conceptualization, characteristics of functional foods are defined by looking at the common points of different definitions [14, 17, 23-25]:

- It should contribute to individual's nourishment; help protecting and improving health.
- Its nutritious and beneficial characteristics should have scientific grounds within the perspective of medical and nutritional science.
- Optimal consumption amount of the food or component should be determined in compliance with medical and nutritional literature.
- The relevant food should be proven to be safe to consume.
- The food components' physicochemical, quantitative and qualitative characteristics should be determined.
- If the food gained functional characteristics after being processed, nutritious characteristics should not be lost.
- The food must be a nutrient that is consumed frequently, not one that is sparsely consumed.
- The food must be in its naturally consumed shape.
- The food or component should not be a substance that is used as drug.

Legal regulations realized in Turkey are similar to the ones in the EU. With market-oriented production of foods or food components beneficial to health and their involvement in food industry, conceptual definition and legal infrastructure required for market regulations started to be prepared. Market requirements as well as responsibilities that came with EU membership process speeded up the preparation of legal infrastructure.

Below, current legislation related to functional foods in Turkey is explained shortly and sorted chronologically.

Year 2002 The Turkish Food Codex Regulation on Food Labeling and Informing Consumers [26]

Turkish Food Codex Announcement Concerning Foods Intended for Particular Nutritional Uses defines foods intended for particular nutritional uses as "it refers to foods that, depending on their special composition or

production processes, can openly be distinguished from foods intended for normal consumption, suitable to the stated particular nutritional intentions and that are marketed by remarking this suitability". The purpose of this announcement, which is a joint study of Ministry of Food, Agriculture and Livestock and Ministry of Health, is to determine rules and groups related to packaging, labeling, advertising of foods intended for particular nutritional uses. This codex is updated in 2019.

Year 2004 Law Regarding Food Production, Consumption and Inspection Numbered 5179 [27]

Being the first legal text containing the term "functional food", Law Regarding Food Production, Consumption and Inspection Numbered 5179 is important. It defines foods in this group with the term "functional food" as well as the term "special food". This law divides "food or food compositions that are beneficial to health" into three groups. These groups are functional/special statement foods, foods intended for particular nutritional uses and diet foods with medicinal purposes and their definitions were given same as in the undermentioned law.

Year 2006 Announcement About Amendment of Rules of Labeling Turkish Food Codex Food Substances in Terms of General Labeling and Nutrition Announcement [28]

Announcement About Amendment of Rules of Labeling Turkish Food Codex Food Substances in Terms of General Labeling and Nutrition Announcement which was prepared in order to determine rules related to promotion and advertisement of food products and labeling of food products which are presented to the end customer in terms of general labeling and nutrition defines foods intended for particular nutritional uses as "including baby formula and juvenile food, food products that are prepared or formulated in order to tend to the needs that arise from particular physiological circumstances and/or diseases, depending on their own special composition or production steps that can be distinguished from other food products, suitable to the nutritious needs in its statement and offered to consumption emphasizing this suitability". In the announcement there are also health statements allowed on the products such as "low cholesterol/low fat/low saturated fat acid/ low sodium helps with cardiovascular health, sugar free products help with dental health, calcium helps to strengthen bone structure and fiber/prebiotic and prebiotic bacteria help regulating the digestive tract".

Year 2006 Turkish Food Codex Components That Can Be Added to the Food Used for Particular Nutritional Uses Announcement [29]

Purpose of Turkish Food Codex Components That Can Be Added to the Food Used for Particular Nutritional Uses Announcement is to determine vitamin, mineral, amino acid and other components in nutritious components that can be added to food used for particular nutritional uses.

Year 2010 Veterinary Services, Plant Health, Food and Animal Food Law Numbered 5996 [30]

Final law related to the matter was published in 4 January 2012. Veterinary Services, Plant Health, Food and Animal Food Law Numbered 5996 regulates food used for particular nutritional uses that are formulated, processed or prepared in order to tend to the needs of gluten intolerant individuals in order to grant these products' proper and hygienic production, preparation, processing, conservation, transportation and marketing.

When legal regulations related to functional foods are reviewed, it is seen that the term "functional food" is included in the legislative texts; rules about packaging, labeling and advertising are determined. An amendment has been made in the article related to advertising and health statement prohibition that distinguished functional foods from similar products and health statements that can be used in advertisements and product labels are allowed for ten separate components which were subject to limitations that were dictated in the bylaw. Because of the fact that functional food is a new sector

in the world markets as well as in Turkey, problems that occur in many countries also occur in Turkey [31]. Significant progress has been made about preparing the related legislation about the matter but it is still to be finalized.

EXPANSION OF FUNCTIONAL FOOD MARKET IN TURKEY

Functional food consumption in Turkey (one of the biggest countries in Europe, with its population around 80 million) is considerably low compared to the leading countries in Europe. Nevertheless, increase in the sales volume suggests that this is a growing market and a potentially profitable one. It is observed that the demand for the packaged functional food is increasing and this demand is mainly driven by the rising urban population in the big cities [3, 32]. Although still quite limited when compared to Europe, it is seen that functional food consumption had an impressive growth during recent years with 52 per cent. The functional food sales in Turkey between 2012 and 2017 are shown in Figure 1. [3].

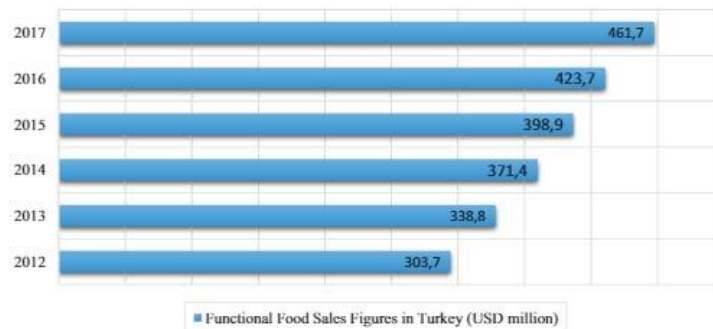


Figure 1. Functional food sales in Turkey 2012-2017 [3]

Because functional foods are a developing sector in Turkey, no official data are present about how the market changed from past to the current state. There is no separate category as functional food in official records and there are no statistical data under this title. While they are not stated as functional foods conceptually, "foods or food components that are beneficial to health" are in the daily diet since ancient times in Central Asia and Anatolia. Kefir and yoghurt which are among the oldest functional foods are consumed in Turkey for a long time. While they are not known as functional foods, foods that has been consumed since ancient times such as yoghurt, kefir and pickle gained public interest recently, which indicates that a different awareness is present about healthy diet and healthy foods [33-36].

From this perspective it is convenient to inspect the momentum that yoghurt -a historical and traditional food in Turkey which has been consumed for long- has gained within the healthism agenda and interpret the demand increase towards functional foods within this framework. Traditionally yoghurt had only been produced at homes; later, for a period, this practice was relatively abandoned with the development of the

industry. Homemade production once again gained momentum in the past few years because of kefir and yoghurt (while the exact date is unknown, it is known that yoghurt was consumed by nomad Turkish tribes for first time in the ancient times. It is estimated that yoghurt was developed when the Milk conserved in animal skins by nomad Turkish tribes naturally went sour and coagulated. Yoghurt was introduced first to Middle East and Anatolia, and then to Europe in the 16th Century [36]) being shown as beneficial to health by the media. The information about against which health problems yoghurt would be beneficial or which diseases it would prevent as well as its socially known taste and benefits increased the public interest towards yoghurt in recent years (Figure 2). Along with this, the information about homemade yoghurt being beneficial to health that was given by healthcare professionals directed people to make yoghurt for their health. Also kits containing milk and yoghurt culture which make the homemade production easier were put on the market. It would be convenient to point out that, since homemade production is not included in the yoghurt consumption data in Turkey, more yoghurt is being produced and consumed than it is shown in the available statistics.



Figure 2. Change of yoghurt production (Tons) [35, 37]

FUNCTIONAL FOOD AND MEDIA

Programs with health context being presented in media in the last 15 years, celebrities as well as healthcare professionals sharing content related to health caused society to gain an interest in cautious nutrition. While there is yet to be a knowledge and awareness about functional foods in Turkey, an activity in this sector started to develop with the expectation of health benefits.

It is obvious that because of interest in health, with the effect of traditional and new media and social networks in Turkey, advertisement, promotion and sharing related to functional foods will increase and this will cause the production to increase. It might be claimed that in situations where correct information is not given, consumers transfer their insufficient and/or unbalanced dietary habits to these products and try to treat their current diseases by consuming these products. It should be remarked that this situation might bring negative health effects [37, 38]. Because of this, it is crucial that every content in media provides correct information and awareness. It is known that in the current world where health, healthy lifestyle and healthy diet claims - healthism in short- are immensely intense, some producers that seek to gain more sales and profit have exaggerative and exploitive approaches [1, 39].

Sometimes information and news presented in various networks may turn into "bio fantasy" media stories. People believing in miracles and appeal to extreme treatment methods date back to very old times. Common publication of such health presentations in media may cause people to both lose their health and their hope to be treated. In addition, belief in miracles and extreme treatments can cause people who can turn the situation into their benefit to occur, turn these people into heroes, and thus, reinforce the expectation of miracles. It is a known fact that the programs that are designed in order to increase view rating instead of giving correct health information are commercially more successful. Therefore, exaggerated claims and presentations in the media might cause every product to be seen as a miracle. Miracle elixirs, miracle treatments take their place in media, especially in television everyday with different formulations. From health discourse information perspective, media should state that the way to benefit from positive effects of food is a high varied and well balanced diet [2, 39].

Another issue to emphasize is that the health information in media and news, programs, web sites, blogs or series must be prepared ethically in order to avoid the impression that they can solve any kind of health problem instantly. A functional food discourse that is apart from ethical concerns could cause balanced and enough nourishment knowledge to be overlooked. New communication technologies, internet and various tools of the new media enabled a new potential to emerge, which is named as patient empowerment [40-44]. Patient empowerment subject is a common subject in both government policies and healthcare services literature. Another important concept along with patient empowerment is health literacy. To increase people's health literacy level will be beneficial in individual, social and economic level [45].

CONCLUSION AND SUGGESTIONS

While functional food legislation in Turkey is still to be completed, it is important to frame it contextually in order to overcome difficulties for sector and market shareholders. Executed regulations were prepared in accordance with EU legislations. In addition to this, it is necessary to be prepared against any problem that may occur in practice and implement stronger regulations especially in product promotions. Knowledge deficiency of consumers and retailers regarding the classification and definition of functional foods is the primary factor that prevents the development of the market. Significant number of product lines and variety, inappropriate labeling lacking necessary information, advertisements being focused on a limited range of products are the main reasons of this lack of knowledge for consumers and retailers. Serious legal regulations should be implemented about label contents in order to increase the trust of consumers in product contents. It must be remembered that wrong or manipulative information about products can spread quicker. In order to remove asymmetrical information, producers must correctly inform retailers to whom they are the closer party. It is important that consumers are aware which food products are really healthy. In recent years, in line with the increasing health awareness of consumers, companies in the food industry have begun to emphasize health-protecting and improving effects on the packaging of their products. However, mentioning a specific benefit on the packaging of a food product is linked to certain conditions since 2006 with regulations made by the EU [4, 5]. In Turkey, expressions that can be printed on the packaging are regulated by the

Turkish Pharmaceuticals and Medical Devices Agency Health Products' Health Claims Regulation which was published in Official Gazette No. 28670 on June 7, 2013. It is vital that all labeling and promotion material abide by the international and national regulations.

Functional foods being in the growing phase of product life curve in Turkey and being an advantageous market shows that the market will have an attractive quality for a long time. It is obvious that this process will be beneficial to customers and increase product variety. However, market's attractive side will also attract businesses that offer bad products and untruthful claims. This process may have negative effects for consumers. In these times where healthy lifestyle is important, prevention of negativity in the development process of market means creating a healthy market as well as protecting health of consumers. Under this context, market inspections along with raising awareness in consumers via health communication studies are significantly important.

Trend of growth in the functional food market in Turkey suggests that the promotion activities for these products will increase in the near future. Although the messages given to increase the perceived reliability of functional food products are important in promotion activities that the food sector players will carry out, they are not sufficient on their own. Messages encouraging consumers to consume healthy foods should also be given, and the positioning strategy should be established within this framework [4].

With the foresight that there would be an increase in modified functional foods, it will be convenient to see that reliability investigations are done before consumption recommendation of these foods. As it is for many foods, excessive consumption could be harmful. Botanical supplements that are labeled with "natural" statement are not always safe or bear no side effects. When common usage of functional foods that have physiological activity is considered, their benefits and risks on societies and individuals should also be inspected and evaluated carefully.

Because the consumption levels in Turkey is considerably low when compared to other European countries, and such products do not take part in the mass market, sales and promotion efforts need to be targeted to a specific, niche segment. Conducting extensive customer-focused studies before a product is presented to the Turkish market will also be beneficial for the healthy expansion of the market. The number of studies in this area is limited, and contradictory results have been demonstrated. There is a need for further work by scientists from different areas such as communication, advertising, marketing and product development [46-48]. With this kind of detailed and collaborative studies, the functional food field can develop significantly in the positive direction and contribute to the health of people. Consumers' knowledge background of functional foods must also be increased by educational activities. Communication strategies are also very important in the promotion of

functional foods by informing the population to understand and increase knowledge in this area, especially regarding the health claims.

ETHICAL STANDARDS DISCLOSURE

This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the name of the ethics committee. Verbal informed consent was obtained from all subjects. Verbal consent was witnessed and formally recorded.

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REFERENCES

- [1] Sezgin, D. (2016). Health transformation: health paradigm and media. *Society and Physician*, March-April(2), 101-109.
- [2] Sezgin, D. (2011). *Medicalized life and individualized health*, Istanbul, Ayrinti.
- [3] Gok, I., Ulu EK. (2018). Functional foods in Turkey: marketing, consumer awareness and regulatory aspects, *Nutrition & Food Science*. DOI: 10.1108/NFS-07-2018-0198.
- [4] Arslan, Y. (2020). The effect of trust in functional foods on willingness to buy: the moderating role of general health interest. *Business and Economics Research Journal*, 11(1), 279-291.
- [5] Ozkan, P., Yucel, E., Yucel E. (2018). The relationship between consumer innovativeness and attitudes toward functional food: an application on university students. *International Journal of Economic and Administrative Studies*, (17. UIK Speacial Issue), 265-280.
- [6] Ozcicek Dolekoglu, C., Sahin, A., Giray, F.H. (2015). Factors that affect functional food consumption in women: example of mediterranean provinces, *Agriculture Sciences Magazine*, 21, 572-584.
- [7] Bozkurt-Bekoglu, F., Ergen, A., Inci, B. (2016). The impact of attitude, consumer innovativeness and interpersonal influence on functional food consumption, *International Business Research*, 9(4), 79-87.
- [8] Basaran, A.A. (2008). Nutraceuticals, *Journal of Medical Science*, 28, 146-149.
- [9] Baser, K.H.C. (2003). Industrial plants as sources of dietary supplements of plant origin, ed. M. Maffei. In *Dietary Supplements of Plant Origin A nutrition and Health Approach*, Taylor and Francis, London. 31-42p.

- [10] Hacıoğlu, G., Kurt, G., (2012). Consumers' awareness, acceptance and attitudes towards functional foods: a research in Izmir city, *Business and Economics Research Journal*, 3(1), 161-171.
- [11] McConnon, A., Cade, J., Pearman, A. (2001). Stakeholder interactions and the development of functional foods, *Public Health Nutrition*, 5(3), 469-477.
- [12] Beer-Borst, S., Costanza, M.C., Morabia, A. (2008). Experimental approach to measuring functional food consumption for risk factor surveillance, *Public Health Nutrition*, 12(1), 29-35.
- [13] Childs, N.M. (1997). Foods that help prevent disease: Consumer attitudes and public policy implications. *Journal of Consumer Marketing*, 14(6), 433-447.
- [14] Erbas, M. (2006). Functional Foods as a New Group of Food, in *Turkish 9th Food Congress*, Bolu, Turkey.
- [15] Turkish Public Health Institution, Very Stakeholder Health Responsibility Development Program 2013-2023, (2014). Food Reliability and Developing Healthy Nutrition, Anil, Ankara.
- [16] Kok Tas, T., Sezer, D. (2012). Consumption research of functional foods in Turkey, Product Variety and Legal Regulations, in *Turkey 11th Food Congress*, Hatay.
- [17] Bech-Larsen, T., Scholderer, J. (2007). Functional foods in Europe: consumer research, market experiences and regulatory aspects, *Trends in Food Science & Technology*, 18(4), 231-234.
- [18] Vural, A. (2004). Functional foods and their effects on health. *Food and Animal Food Science Technology*, 6, 51-58.
- [19] Devcich, D.A., Pedersen, I.K., Petrie, K.J. (2007). You eat what you are: Modern health worries and the acceptance of natural and synthetic additives in functional foods, *Appetite*, (48), 333-337.
- [20] Menrad, K. (2003). Market and marketing of functional food in Europe, *Journal of Food Engineering*, 58(2-3), 181-188.
- [21] Niva, M. (2007). 'All foods affect health': Understandings of functional foods and healthy eating among health-oriented Finns, *Appetite*, 43(3), 384-393.
- [22] Siegrist, M., Stampfli, N., Kastenholz, H. (2008). Consumers' willingness to buy functional foods. The influence of carrier, benefit and trust, *Appetite*, 51, 526-529.
- [23] Urala, N., Lähteenmäki, L. (2003). Reasons behind consumers' functional food choices, *Nutrition & Food Science*, 33(4): 148-158.
- [24] Urala, N., Lähteenmäki, L. (2004). Attitudes behind consumers' willingness to use functional foods. *Food Quality and Preference*, 15(7-8), 793-803.
- [25] Hilliam, M. (1996). Functional foods: The Western consumer viewpoint, *Nutrition Reviews*, 54(11), 189-194.
- [26] The Turkish Food Codex (2002). Regulation on Food Labeling and Informing Consumers, Ministry of Agriculture and Forestry, Ankara, Turkey.
- [27] Law Regarding Food Production Consumption and Inspection, in 5179, The Grand National Assembly of Turkey Legislation, (2004).
- [28] Announcement About Amendment of Rules of Labeling Turkish Food Codex Food Substances in Terms of General Labeling and Nutrition Announcement. (2006).
- [29] Turkish Food Codex (2006). Components That Can Be Added to the Food Used for Particular Nutritional Uses Announcement. Ministry of Agriculture and Forestry, Ankara, Turkey.
- [30] Turkish Law on Veterinary Services, Plant Health, Food and Animal Food. Law Number, in 5996. (2010).
- [31] Gezginc, Y., Gok, S. (2016). With the Adana province example, awareness of consumers towards functional foods. *Ataturk University Journal of the Agricultural Faculty*, 47(2): 101-106.
- [32] Euromonitor International (2018). Fortified/Functional packaged food in Turkey. <https://www.euromonitor.com/fortified-functional-packaged-food-in-turkey/report> (accessed 5 January 2019).
- [33] Turkish Ministry of Development Tenth Development Plan (2014). 2014-2018 Specialization Commission on Food Products and Safety. Ankara.
- [34] Aras, I. (2015). *Milk and dairy products sector report*, Mevlana Development Agency, Konya, Turkey.
- [35] Turkish Ministry of Food-Agriculture-Livestock, (2018). Milk and Milk Products Sector Foreign Markets Study.
- [36] Sireli, U.T. Onaran, B., (2013). The Secret of Long Life: Yoghurt. *Suthatti*, 16, 16.
- [37] Turkish Statistic Institute and Turkish National Milk, (2018). Turkish Statistical Institute and Turkish National Milk Council Data.
- [38] Gilbert, L.C. (2000). The functional food trend: What's next and what Americans think about eggs. *Journal of the American College of Nutrition*, 19, 507-512.
- [39] Lawrence, M., Rayner, M. (1998). Functional foods and health claims: a public health policy perspective. *Public Health Nutrition*, 1(2), 75-82.
- [40] Isleten, M., Yuceer, Y.K., Yilmaz, E., Mendes, M. (2007). Consumer attitudes and factors affecting buying decision for functional foods. *Gıda*, 32(1), 25-32.
- [41] Greenhalgh, T., Wessely, S. (2004). "Health for me": A sociocultural analysis of healthism in the middle classes. *British Medical Bulletin*, 69(1), 197-213.
- [42] Urala, N., Lähteenmäki, L. (2006). Hedonic ratings and perceived healthiness in experimental functional food choices *Appetite*, 47(3), 302-314.
- [43] Yabancı, N., Simsek, I. (2007). Probiotic product consumption status of college Students. *TSK Protective Doctorship Journal*, 6(6), 449-454.
- [44] Coskun, T. (2005). Effects of functional foods on our health child, *Health and Diseases Magazine*, 48, 89-94.
- [45] Sezgin, D. (2013). Understanding health literacy. *Galatasaray University Iletisim*, Special Issue, 73-92.

- [46] Oncebe, S., Demircan, V. (2019). Factors influencing consumers' consumption for functional foods. *Akademik Gıda*, 17(4), 497-507.
- [47] Buyukkaragoz, A., Bas, M., Saglam, D., Cengiz, S.E. (2014). Consumers' awareness, acceptance and attitudes towards functional foods in Turkey. *International Journal of Consumer Studies*, 38, 628-635.
- [48] Dogan, I.S., Yildiz, O., Eydurán, E., Kose, S. (2011). A study on determination of functional food consumption habits and awareness of consumers in Turkey. *Bulgarian Journal of Agricultural Science*, 17(2), 246-257.
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