

Social and behavioral determinants of food safety in European union and republic of Macedonia

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Abstract

Food safety is one of the most important policies of the European Union, and it is especially important when it comes to consumer protection policy. EU legislation in this area is very broad and is guided by the slogan "from field to table", which in fact explains that the European Union has with its legislation and policies hooked up the whole chain of production, distribution, sale and even food consumption.

Such an integrated approach to food safety, aims to ensure a high level of food safety, animal health, animal welfare and plant health within the EU, and contribute to the effective functioning of the internal market. However, many domestic and foreign food producers use cheap tricks and display fake features of their products to mislead consumers and thus increase sales.

Good knowledge of the legislation in this area is essential for the Republic of Macedonia, above all for the further development of the economy and agriculture, as well as the export of the single European market. The implementation of this approach involves guaranteeing efficient control of the system for assessing compliance with EU standards in the field of food safety and quality, animal health, animal welfare, animal nutrition and plant health within the EU, and in relations with third countries that export to the EU markets. Risk management and scientific research in this area are entrusted to the European Food Safety Authority (EFSA).

Keywords: food safety, food falsification, regulations, misleading consumers

1. Introduction

Consumers can consider that the food they consume is safe if the dangers of food are minimized and does not cause harmful consequences for their health. For harmful to human health food shall be considered as containing harmful substances or unacceptable amounts of harmful substances, organisms or micro-organisms that are referred to as food hazards in a common name. Food hazards cause health risks to people, which are manifested as acute and chronic diseases. For these reasons, the dangers of food should be constantly under control.

Today, health statistics indicate an increase in the number of obese people, an increase in cardiovascular disease, digestive tract diseases, resulting in a rise in type 2 diabetes, stroke, heart attack, cancer. One of the factors is the food we eat, as well as eating habits and movement. However, if the food we eat is less valuable, which is achieved by falsification and producing foods with poor nutritional profile, then, people who care about dietary habits and movement find it difficult to recognize or choose.

Food safety management in the Republic of Macedonia has been significantly improved over the last two decades. The way to ensure food safety has changed at the global level. Food security is achieved in two basic ways: with legal provisions and private control. The legal regulations for health correctness and food control primarily protect the health of consumers, point to implementation mechanisms and sanctions that, if need be, should be applied. Private regulation

in the field of food safety is linked to the trend prevailing in large production and sales chains, and it is the introduction of different standards. Most of these standards are similar and they all have one main objective: protecting consumers through an integrated process based on food safety management, achieving the basic minimum conditions acceptable for food safety and their verification by third parties.

2. Materials and Methods

A standard methodological procedure was used. The methodological procedure includes a basic component, research of domestic and foreign literature in the field of contemporary trends in food safety and other professional literature in order to protect consumers from food counterfeiting and misleading them. Case studies from practice have been used, determined based on the allegations given in the relevant literature. The following methods of research were used: comparative, descriptive, inductive and analytical method, with generalization of data, and to conclude by synthetic thinking.

This allowed for parallel consideration, with comparative views on food safety aspects and ways of food falsification in the direction of protecting consumers from misleading, presented through various practices, examples in the literature, as well as applied legislation, which contributed to conclusions about the possibilities for further development of the food safety system.

3. Results and discussion

3.1 Food falsification with additives, alternative raw materials and unauthorized substances

Falsification, given the earnings, today, is the fourth activity in the world after the sale of weapons, drugs and prostitution. Even five to seven percent of the annual turnover of the market, according to estimates, refers to falsified products. In this way, the EU loses hundreds of thousands of jobs annually. Falsification causes damage to a large number of participants, from the production of the original, to the sale. The original producer feels the loss at four levels: the first is a direct loss of sales, when, instead of the original, the customer buys a forgery, so that the money is given to the forger (material damage). The other is an indirect loss of sales. Namely, the original manufacturer loses prestige due to customer dissatisfaction (non-pecuniary damage). The third is a long-term loss, visible in the loss of the market, which affects investment, marketing and, finally, wages (material and non-pecuniary damage). The fourth level of loss, neglecting the material aspects, refers to human health as a result of food consumption, whose expected nutritional profile has been changed with forgery, and the introduction of the nutrients needed is reduced, and the consumer is not familiar with it, which leads to misconception.

What is forgery? Forgery or falsification is the production or creation of tangible and intangible objects or rumors, which are largely or partially similar or completely different from the original or the truth, and are shown as originals, originating from a known source or falsely related to it ^[1].

Food falsification fits in the definition and can be divided into:

1. Falsification of the composition of certain foods with raw materials originating in the same plant or animal species, but not as declared or as expected for the designated product,
2. Falsification of the composition of certain types of food with raw materials obtained from other plant or animal species,
3. Falsification of country of origin, production technology and trade name,
4. Falsification of the composition of certain foods, replacing the original raw materials with additives, giving the illusion that it is the designated product,
5. Falsification of the composition and shaping the product, by adding illicit and harmful substances to health.

The term nutritional food profile is directly proportional to the quality of the food and is expressed in terms of mass / volume (100 g or 100 ml) or energy base (100 kcal or 100 kJ) or a certain amount of pre-packaged food, which mass or volume represent one meal. The nutritional profile is associated with the ability to compile food or health claims for food, but it also provides the basis for conducting a proper diet. Each food can have nutritional values or prominent values of certain nutrients within the recommended daily intake of certain nutrients (Guideline Daily Amount-GDA). The nutritional

profile of food, according to these values, is evaluated or used to align the daily dose. Foods that have a well-balanced protein composition, carbohydrates (as well as sugars), fats (such as type of fats) and sodium (salt) are considered, in the narrow sense, as foods suitable for proper nutrition. This does not mean that foods that are high in fat, sugars or salt, whose nutritional profile is less acceptable, is not for consumption, but means that the consumption of such foods should be aligned with the rest of the necessary nutrients. Food falsification directly affects the nutritional profile of the food, it changes to the worse, and the consumer reduces the possibility of carrying out proper nutrition, especially when the nutritively valuable ingredients are replaced by less valuable or nutritional worthless and dangerous ingredients. From this point of view, it becomes a health problem, and in some of the forgeries with illicit substances, such food itself is health-defective and unsafe ^[2].

Falsification, based on non-defining the food category, can often not be clearly identified and forgers use that fact to "develop" new products of questionable nutritional value. Nutritional value of food is a major factor in evaluating the nutritional profile of food. Food useful from the food aspect provides the body with the necessary ingredients that affect human metabolism, which gives it all or most of the needs. When beneficial nutrients change with less valuable and even worthless ingredients, it is possible to influence consumer health. If full-bodied ingredients are replaced with harmful, then consumer health is certainly jeopardized.

3.2 Food safety regulations and institutions

The basic legal act in the Republic of Macedonia that regulates the control of food safety in all phases (production, processing, storage, transport, distribution, retailing and delivery) is the Law on Food Safety ^[3]. The law regulates the general and specific conditions and obligations of food operators, their registration and approval, the conditions for import and export of food of animal and non-animal origin, official controls and their financing, together with the monitoring of residues and unauthorized substances.

With the adoption of the new Law on Food Safety, in 2015, the Food and Veterinary Agency (FVA) made a change in the legal framework, which also applies to the labeling of food. The Law on Food Safety has been supplemented by several provisions for the labeling of products, which implement the new EU legislation on consumer information on foodstuffs, which started to apply in the European Union on December 13, 2014.

In accordance with this law, it is forbidden to highlight the specific properties of food that are similar to other food of the same quality, as well as the use of images, drawings, signs and texts that could mislead the consumer in terms of product identity, the origin, the composition, the properties, the purpose and the effect of the product.

¹ Prof. Dr. Sc. Đurda Vasić-Rački, Prof. Dr. Sc. Kata Galić, Prof. Dr. Sc. Frene Delaš, Prof. Dr. Sc. Tomislav Klapeč, M.Sc. Dubravka Kipčić, M.Sc. Marijan Katalenić, Nino Dimitrov, dipl. Ing., Bojan Šarkanj, B.Sc. Ing. "Chemical and physical hazards in food", Croatian Food Agency, Osijek, 2010, page 227.

² Prof. Dr. Sc. Đurda Vasić-Rački, Prof. Dr. Sc. Kata Galić, Prof. Dr. Sc. Frene Delaš, Prof. Dr. Sc. Tomislav Klapeč, M.Sc. Dubravka Kipčić, M.Sc. Marijan Katalenić, Nino Dimitrov, dipl. Ing., Bojan Šarkanj, B.Sc. Ing. "Chemical and physical hazards in food", Croatian Food Agency, Osijek, 2010, page 228.

³ Official Gazette of the Republic of Macedonia No. 157/10, 53/11, 1/12, 164/13, 187/13, 43/14, 72/15, 84/15, 123/15, 129/15, 213/15 and 39/16

According to the regulation, the use of nutrition and health claims by food operators is not mandatory, but if they want to highlight some of the properties of the product, then they must obey the rules and the claims should not be false, ambiguous, mislead consumers, nor cause doubts about the safety or nutritional value of the products.

In this regard, the Rulebook on nutrition and health claims for commercial purposes in labeling, presentation and advertising of food (Official Gazette of the Republic of Macedonia No. 65/13)^[4]. The purpose of the Rulebook is to establish a system for the proper use of nutrition and health claims and to properly inform consumers, protect them from misleading, and for companies the new rules of the game constitute a guarantee of equality on the market and elimination of unfair competition.

In the Republic of Macedonia, the Food and Veterinary Agency (FVA) is a national institution that takes care of the protection of people's health from diseases that are transmitted through food and animals, the protection of consumers from misconception and their transparent and timely information on possible food hazards, through control of the implementation of regulations harmonized with EU standards and international standards ratified by the Republic of Macedonia.

In 2016, a total of 44,939 controls were carried out by food inspectors and official veterinarians.

They point out that 316 complaints were filed in 2016 by the Citizens' Consumer Protection Department at the AHV. Of these, established, i.e. with confirmed allegations, were 144 complaints. The majority of the complaints, 190 or 60 per cent of the total number of complaints, refer to foods of non-animal origin, 36 complaints, or 11 per cent refer to food of animal origin, 90 or 29 per cent of the total number of complaints Health care and animal welfare^[5].

3.3 "Serving" lies and misleading consumers

Claims, i.e. allegations, of nutritional and health properties of certain foods are an effective marketing tool. In this way of advertising, consumers often see an easy and quick way to choose the foods that will contribute to their proper diet. Such marketing claims are strictly regulated by the European Food Safety Authority (EFSA) and the Macedonian Food and Veterinary Agency. But, if these claims are not in accordance with such rules, they are often not justified and are not a good guide to the correct selection of food products.

The misleading advertising of food products can mislead consumers and affect their consumer decisions by:

- providing false or incomplete information;
- Suggesting unjustified nutritional and health properties.

In addition to the specified imperative conditions in the Rulebook on definitions and administrative procedures, the general principles for claims are regulated.

According to these principles, the use of nutrition and health claims should not:

1. To be false, ambiguous or mislead consumers;
2. Cause safety concerns and / or cause a suspicion in the

nutritional value of other foodstuffs;

3. Encourage increased consumption of a food product or condemn excessive consumption of a food product;
4. To emphasize, suggest or implicate / state that a balanced (balanced) and diverse diet cannot provide the appropriate amount of nutrients. An exception may be granted only where the corresponding quantities of nutrients cannot be provided through a balanced and varied diet, taking into account the specific conditions of the authorization procedure laid down in Article 22 of this Rulebook, including the conditions for their application.
5. Refer to changes in the physiological functioning of the human organism, which may cause fear or use fear to the consumer through text or through illustrative, graphic or symbolic representation.

3.4 Giving false or incomplete information

Given that certain producers, through the product and image names, mislead the citizens, who most often attract the lower prices of such products, they contribute to destabilizing the market and increasing unfair competition.

For example, advertisers allege that the product is sugarless, or without additives and in fact it is not; or foodstuffs designated as "GMO FREE" (without genetically modified organisms), if they contain soybeans produced with genetically modified organisms.

A more frequent case of providing false information is the provision of incomplete information on the nutritional and health properties of foodstuffs. Thus, manufacturers and retailers can emphasize only one nutritional aspect of the food product. For example, a manufacturer with easily visible text on the packaging may claim that the product contains a low level of sugar, without mentioning that the same product contains high levels of salt and fat - and therefore belongs to foods that should not be consumed very often.

A similar example is the advertising of juice, which implies that the drink contains antioxidants, without stating that it has high sugar content. Certain juices advertise that they do not have added sugars but avoid adding that the total amount of sugars is high. As a result of such advertising tricks, consumers base their decisions on incomplete information.

Also, more and more natural honey can be found, where on the bottoms of the jar is written that it is a product of honey, prawns are sold as sour cream, and the citizens are deceived with fruit juices, where the product is declared as fruit juice, but the fruit content appendage shows that it does not contain enough fruit to be fruit juice.

According to the regulation in the Republic of Macedonia, products from milk and vegetable proteins, such as sour cream and cheese, cannot be marketed as dairy products; they must be sold only under a certain commercial name, with a clear indication of their origin.

Additionally, in the markets, plant products on shelves can often be found along with dairy products, although it is a matter of completely different foods. At the same time, if consumers want to read what they write on the packaging they need a magnifying glass.

Dairy products, including white cheese and yellow cheese, are products derived from the processing of raw milk and if other technological ingredients are defined by the technological

⁴ This Rulebook harmonises the Regulation (EC) no. 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims according to foodstuffs (CELEX number 32006R1924)

⁵ http://www.fva.gov.mk/images/evaluacia_potrosuvaci_2016.pdf

process, then that product is beyond the definition of cheese. Regarding the sale of products that contain vegetable fats or oils, in addition to being mandatory in the declaration, in order to eliminate the possibility of misleading consumers from buying milk products, they should be compulsorily sold separately from dairy, to another, a special shelf. Also, some of the products contain data "contains allowed additives", but no additives contained in the product are listed.

3.5 Suggesting unjustified nutritional and health properties

According to the regulation, it is forbidden to label and advertise food with data suggesting medicinal properties related to the prevention or treatment of diseases, highlighting specific food properties that are similar to other foods of the same quality as well as the use of images, signs and texts that the consumer could be misleading about the properties, purpose and effect of the product.

However, in order to protect themselves against violations of advertising and labeling rules, manufacturers sometimes use nutritional and health claims to put protective words that essentially soften or relativize these allegations. For example, yogurt containers indicate that yogurt "can help" to reduce digestive difficulties, followed by an asterisk and a small text that the claim is based on consumption twice a day, accompanied by a balanced diet and a healthy lifestyle.

Even the color of the packaging itself can affect the perception of consumers as to whether a particular food is healthy. It has been established that food products whose nutritional label is in green are accepted by consumers as healthier, even when this is not so. Also, the use of packaging on "checked" claims or emblems that resemble nutritional labels, or quality labels, subconsciously affect the consumer to think that the product has undergone some certification process, and creates an image that the product is healthy.

Another advertising tactic is to cite a true claim, but in a way that suggests, that, the product rebounds from products in the same category. For example, the intake of cholesterol-free vegetable oil should mean that this oil is better than the rest, and the fact is that no oil contains cholesterol. The same applies to the "cholesterol-free" mark on rice, dried prunes or any non-animal product - hence there can be no cholesterol.

The regulation of nutrition and health claims for food claims can be ignored by manufacturers and in cases where such claims are placed through the brand name - for example, "Healthy cookies" or "Choose natural".

3.6 Consumer decision to choose food

Consumers want to get the best quality at the lowest prices. Determining what is the best quality is not always a simple task, and even providing more information to consumers often cannot solve the problem because the data can be ignored or misinterpreted.

Consumer choice of food choices are influenced by various factors, for example:

- The consumer's environment
 - location, climate, relief, population density, degree of urbanization ...
- Demographically
- Economically

- Sociological
 - Culture
 - Social class - social layer
 - Family
 - Reference groups and personal impacts
 - A lifestyle
- Psychological factors ...

In making decisions, the consumer passes through five stages:

1. Recognition of the problem,
2. Requesting information,
3. Assessment of alternatives,
4. Purchase decision,
5. Behavior after purchase.

Public food safety policy is often based on the assumptions that it is better to give more information to improve the decision-making process and in a crisis situation, but of course, providing more information cannot be without effect, but in some cases it can increase the confusion and consumer concerns ^[6].

4. Conclusions

The various harmful substances that can be found in food are the result of the natural interaction of certain food ingredients, the environmental and technological impacts, poorly implemented technological procedures, poorly applied agricultural practices, or poor selection of raw materials. Common to them is - acute or chronic effects on human health.

Food falsification, in contrast to the previous one, is devised an intention to use raw materials that are less valuable, changing the characteristics of the origin, the use of additives contrary to the allowed way and the use of raw materials or chemicals that are forbidden for food additives. Unlike other harmful substances that can be found in food, deliberate falsification is a work that does benefit anyone, but to consumers can affect to the health. In most cases of food falsification, the course of falsification can be tracked and the forgers identified by name.

The designation should be clear, precise and not mislead the consumer and all this is done by the food operators, i.e. the manufacturer, and the importer is responsible for the data from the declaration of import products. The obligation of food operators is to guarantee to inspection services and consumers that they place on the market safe products and products that are properly labeled.

The Republic of Macedonia has officially introduced a series of typical elements for regulating food safety and control of the system in the period of EU accession. Food safety control is currently a combination of an integrated approach based on food safety management processes (for example accreditation, annual audits, third party assessment) and direct control (for example, inspections, sampling, testing of the final product). Effective food safety oversight and management requires the joint efforts of industry, state regulatory bodies, scientists and

⁶ Ivan Savović, Aleksandra Kokić Arsić, Katarina Kanjevac Milovanović, Aleksandar Đorđević, "Quality and food safety from the angle of the user" Faculty of Engineering Sciences - Kragujevac, National Conference on Quality of Life, 2012.

consumers.

The EU accession process will help the further development of the food safety system in the Republic of Macedonia, and the continuity of development will be an important driver in the coming years. The long-term impact of EU accession can be that, the increase in the market will lead to a significant increase in demand, both in quantity and in quality, which will help the growth of the agricultural and food sector in the Republic of Macedonia.

Therefore, the focus is on the problem of food safety from the point of view of pollutants and pesticides, and health food safety is a carrier of dangers in the form of poor quality food, mostly as a result of food falsification. Clearly, the food on the table can be medically correct, without polluting substances and pesticides, microbiologically clean, and also, through its composition and essential ingredients, to have harmful effects on human health.

Future research should focus on supply chain analysis and barriers to key stakeholder engagement, consumer opinion about the quality of the domestic market and the prevention model to prevent smaller producers from being excluded from the fast-moving markets.

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