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Food Traceability and Consumer Awareness in Turkey: A Review Article

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Abstract: In recent years, after some unpleasant events experienced with food safety, serious steps were taken in order to protect consumer health. In the food supply chain, the traceability of product and production phases is important from the point of view of both product quality and food safety. In order to strengthen the application of health and reliability standards within the food chain, serious studies on food traceability were made in the developed countries. Also in Turkey, several legal regulations on food traceability have been put into effect. However, the consumers lacking information about food traceability and food health will extremely decrease the possibility of getting efficiency from the process. In this compilation, those steps taken in Turkey concerning food traceability and information concerning consumer awareness were evaluated.

Key words: Food, traceability, smart labels, product follow-up system, consumer awareness

INTRODUCTION

Traceability within the food sector is the follow-up of foodstuffs from the production to the consumption point. By means of such traceability system, it now is possible to define easily the origin of a product in which a substance harmful to human health has been detected and the upstream phases of such product. By traceability which is also called record-keeping system, all steps within the whole food chain are known from the primary production to consumption in order to ensure the foodsafety (Ciftcioglu, 2007). Food traceability is a determination process of a product's physical position within a supply chain. It facilitates the provision of information on logistics, recall and the consumer to the other parties involved whereas process traceability aims to determine the type and time of those applications and treatments that the product has passed through during the steps from the production until reaching the consumer. In this way, the realizing of those actions that prevent the factors that create threats and risks that are based on the dangers during production is now guaranteed (Opara, 2003).

TRACEABILITY IN THE CASE OF THE EUROPEAN UNION

After the unpleasant events experienced worldwide with food safety, the European Union (EU) thinking that the current controlling system should be changed in order to ensure food safety has taken steps to obtain safe foods (Kilit, 2013). By means of both EU Parliament's and Council's regulation on Food Safety and Consumer Safety issued with number 178/2002 and dated January 28, 2002, all the frameworks regarding both production and inspection of food and agricultural products were drawn and the constituting of a Traceability System within the food supply chains is expressed (Anonymous, 2004). Food traceability has been started to be applicated compulsorily within the EU since January 1st, 2005. Besides this, the International Organization for Standardization (ISO) has also published a new standard called ISO 22005:2007-Traceability in the Feed and Food Chain. With this new standard which will be added to the ISO 22000 Food Safety Management System series, it is aimed that the consumers achieve safe food (Anonymous, 2007). After the horse meat scandal encountered in the United Kingdom in France and in the Netherlands on May 6, 2013, the European commission has accepted a package of measures in order to strengthen the application of health and reliability standards for the whole agricultural food chain with the purpose of improving the European regulations (Kilit, 2013).

TRACEBILITY IN TURKEY

The traceability of both product and production phases within the food supply chain is important from the point of view of both product quality and food safety

(Halawany *et al*., 2007). During the Spanish EU Presidency, a new period for Turkey in the process of food safety was entered into by the opening of the chapter Food Safety, Veterinary and Plant Health Policy on June 30, 2010 (Kilit, 2013). Thereafter, several legal regulations regarding traceability have been made in recent years within the frame of EU harmonisation. The Turkish Food Codex-Regulation on labeling was published on December 29, 2011 with number of 28157 (3rd bis). The goal of this regulation is to determine the rules of general and specific special labeling of food stuffs, the rules of labeling from the point of nutrition, the specific rules regarding promotion and advertisement as well as the rules regarding nutrition facts and health declarations of those foodstuffs supplied to the final consumer and mass consumption places. In this regulation, label is described as any sign, brand, stamp, illustrative and other generic elements that are written, printed, stamped with templates, marked, engraved by stamping, cold-printed or glued onto the packaging or the container of a product and labeling is described as any kind of food-related writings, information, trademarks, brand names and illustrative elements and signs that appear on materials such as packagings, packets, documents, declarations and labels that are given with the food or that describe the food. In this regulation, the Product Traceability System (PTS) entered into application with expressions such as in order to obtain product traceability for specific foodstuffs or groups of foodstuffs, the ministry in those cases it deems such necessary can make or have made special applications regarding the application of such product follow-up system with the labels and the foodstuffs or groups of foodstuffs for which a product follow-up system will be applied on determination by the ministry will be published on the ministry's websit, specifying the related time of application time (Anonymous, 2011). With the entering into application of the PTS which is planned to be applied as smart label, the consumer will be able to inquire the foodstuff bought by using means of SMS, phone, mobile applications, websites, etc. At the beginning, the Ministry of Food, Agriculture and Livestock Breeding is planning to implement the PTS with alcoholic beverages, food additives, honey, energy drinks, black tee, vegetable oils, baby foods, formulas and supplementary foods. Although, the starting date of this applicaton has been stated to be December 31, 2013, the process has been postponed to August 31, 2014 (Anonymous, 2011).

LABEL CONTENT AND CONSUMER AWARENESS

It has been reported that according to the data of the Global Food Safety Index for 2012, Turkey holds the 44th place in accessibility to foodstuffs and 35th place in the grading of food reliability (Kilit, 2013). While serious steps have been taken on the level of legal regulations for the consumer to reach safe food there are not enough studies made in the field of education concerning informing the consumer in this concern. The consumers who are one of the important factors in reaching safe and right foodstuffs are not able to sufficiently fulfill their responsibilities with many phases within the food safety chain from buying a foodstuff until its consumption at home (Bosi *et al*., 2007; Jevsnik *et al*., 2008a; Karabudak *et al*., 2008; Redmond and Griffith, 2004). In fact, as the last link within the food supply chain they play an important role in preventing of food-related illnesses on the phases of purchasing, preparing food at home, and right food processing (Jevsnik *et al*., 2008a, b). The packaging that is the most important way for the consumer to learn information regarding the foodstuff and to recognize such foodstuff while buying has three basic functions: protection of the product contained in it, providing ease with loading, discharging, stockpiling and use to promote the product and to encourage the consumer to buy it (Kokangul and Fenercioglu, 2012). As a result of coming up the importance of the packaging information for the consumer, the publication by the EU of regulation 1935/2004/EC and later of the more spesific regulation 450/2009/EC was issued where by the legal fundation towards the right usage, safety and marketing of the smart packagings was created (Restuccia *et al*., 2010).

The smart label is one of the basic means in the establishing of traceability systems for an effective and sustainable food safety. Since, the product freshness can be determined by the application of such smart labels by preventing foodstuff-related poisonings, it will be provided both protecting the consumer's health and preventing economical losses (Kocaman and Sarimehmetoglu, 2010). The label information constitutes one of the important parts of the food safety because of ensuring that the consumers reach the related product information of avoiding that wrong information is protected and of being able to make conscious choices (Cheftel, 2005). On the other hand, among the information stated on its label, the consumer now predominantly reads production and/or expiration date of a product followed by its nutritional value, the composition of those substances contained as well as the additives the consumer tries to find out (Peters-Texeira and Badrie, 2005; Sen, 2007; Bozkir, 2009).

By means of the smart label application, consumer conscience is gaining more and more importance. As the conscious consumer is continuously inquiring how healthy the foodstuffs he/she is consuming are when buying something, searching answers to questions such

as which phases do foodstuffs undergo during production? how much additives and residual substances do foodstuffs contain? to which extent do manufacturing companies comply with the hygienic rules? how suitable for production are those devices and equipments used by these companies? how efficiently are these companies inspected? (Bal *et al*., 2006). The conscious consumers have expressed their dissatisfaction with the label information because of the following problems, the additives contained in the product are not stated, imitation of the packaging of high-quality products, the fact that the information on the packaging is too small to be read and that such may be erased quickly, the information about product content is too technical or insufficient there is no original translation for imported products, the usage and storage information is insuffient, no exact indication of the manufacturing company's name and address, the colour of the packaging makes it harder to read the information on it, the signs are not understandable, no indication of the production/expiration dates, etc. (Karabiber and Hazer, 2010).

Although, researches made (Ozgul and Aksulu, 2006; Aygun, 2007, 2012) have revealed that there has been a considerable increase in Turkey in recent years in the consumer's tendency to examine label information, many different studies have revealed that the great majority of the consumers still does not read label information and moreover that those who read them and find them insufficient (Yurdagul, 1991; Albayrak, 2000; Saglik, 2003).

At first place among those factors that effect the reading of the labels by the consumers, comes the time that consumers may spend to read the labels, the label shape (size, font used and language) and in general, the consumers' value judgment together with their attitudes towards food production, distribution and preservation (FSA, 2010). Nevertheless, it was revealed by many researchers that social-demografic characteristics of individuals too have effects in different ways and on different levels on the food label reading behaviours (Drichoutis *et al*., 2006). In recent years, important increases with the sensibility about examining label information by consumers with elementary education and high-school graduates have been confirmed. But differences can be seen between the importance given by the consumers to examining labels and evaluating these information in their purchasing choices (Ozgul and Aksulu, 2006). Most of the consumers pay attention and give priority to the reading of the labels of those foodstuffs that bear the risk of spoilage and causing to foodstuff-related poisoning. Usually when a product is bought for the first time or when different brands of the same products are evaluated, the cosumer is behaving more attentively concerning the product label concern (Karabiber and Hazer, 2010). A high education level has a positive impact on reading and evaluating of the label information (Unusan, 2007; Kose and Yaman, 2010; Ucar *et al*., 2012).

The studies on food traceability and application of this system in Turkey are extremely limited. In a study which evaluates traceability in dairies, it was revealed that producers do not have sufficient knowledge on food regulation and food traceability and that they issue documentations only for accounting purposes and it was stated that financial impossibilities and lack of knowledge are the biggest obstacles for traceability (Siki *et al*., 2012). In several other studies, studies were made towards developing a computer software programme aiming at participating of all stakeholders in traceability in the fruit and vegetable sector by means of ensuring the participation also of the feedstuff sector within food traceability using a web-based traceability system. (Cebeci, 2007; Oral, 2009).

CONCLUSION

In recent years, human health and nutrition came into prominence due to food-related dangers. On the one hand those studies made on food safety were continued rapidly on the other hand, traceability from the farm to the table shows up as a system that gives the consumers the opportunity to facilitate their choices about what to buy and what to not buy. By means of traceability, all participants such as producers, processors, marketers and consumers being part of this system from food production to food consumption can be within very efficient communication with each other. The main responsibility for a healthy processing of the traceability system is up to the legislative, besides this consumer conscience is becoming important too. When the consumer follows-up the product he or she bought and gets informed about the past and the production methods of the products, he or she will buy that product with more confidence. However, PTS which will be started to be used in some foodstuffs in Turkey in August 2014 must be explained to the consumer first. The consumer has to know many details from the nutritional value of the product he or she bought to the production technology applied and to understand what he or she reads when buying such product. The chance for application of this system with a consumer profile who do not know the difference between pasteurized milk and long-life milk nor the harmfulness to human health of those antibiotics and agricultural

pesticides taken with the foodstuffs and the meaning of the cold-chain with food and who are far away even from reading and understanding of the label information is extremely low. Above all, creating of social awareness on food safety and product technologies is a must. Therefore:

- In the primary schools, basic education about food safety, product technologies, traceability and its application must be given
- Visual publications and promotion materials must be used for teaching of the food regulation to the consumer
- Seminars must be organized within the frame of cooperations between the university and the industry in order to explain this field to the consumers
- Lessons on food safety and food regulation must be added to the optional subjects of the faculties that are housing all vocational groups

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