

# Nutrition and Food Technology: Open Access

Mini Review

Volume: 2.2

Open Access

## Food Safety - A Long Term Perspective in Portugal

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Received date: 12 Feb 2016; Accepted date: 18 Apr 2016; Published date: 22 Apr 2016.

Citation: Baltazar AL (2016) Food Safety - A Long Term Perspective in Portugal. *Nutr Food Technol* 2(2): doi <http://dx.doi.org/10.16966/2470-6086.121>

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### Abstract

Food safety is something innate throughout the life of man and has revealed and consolidated its importance over time.

Currently, the recognition that food safety management systems are essential in the food sector is a maximum. However, it is important to note that the success and effectiveness of these systems depends intrinsically of food handlers in order to create, promote and cement the Portuguese culture in food safety.

This new approach to study food security, more suited to the role of individuals who handle food, does not yet have enough data not defined research techniques, but we can say that whatever the measures to be implemented, it is implied that should involve actively top management of the food business, in particular in communicating to its employees, importance, training and food security in awareness.

And last, but not least, the consumer is very important in rooting food security in culture, because without this notion of relevance to public health, will never be able to require their presence.

**Keywords:** Food safety; HACCP, Portugal; World Health Organization; Public Health and Food Microbiology

### Introduction

Food is essential for life, but the ingestion of contaminated food can cause illnesses and even death. Fortunately, this last scenario only occurs in a minority of cases; although morbidity associated with food borne diseases worldwide have social and economic consequences [1].

Food borne diseases are a group of disorders, defined as any disease of infectious or toxic nature whatsoever, caused by the consumption of food or water [2]. This kind of diseases may present various causes depending of the food hazards, namely, physical, biological and chemicals.

Some foods are naturally poisonous or toxic, such as some species of mushrooms. Other food, not being naturally toxic may have an increased susceptibility to contamination when its production process is more extensive, since the “field to the plate” [3].

Food safety must embrace all stages of food processing, preparation, cooking, distribution, etc. to ensure that food is safe for Man.

The food chain, as any another chain, is only as strong as their weakest link. Responsibility for food safety covers not only the producers and the food industry but also governmental entities as well as consumers themselves [4].

The governmental measures should elaborate and implement appropriate food safety legislation; ensure medical care for the victims; register and collect epidemiological data and outbreaks; and make use of the results of inspections [5]. All this information can be used in order to design strategies and recycle or introducing knowledge in the food sector and consumers.

Consumers have also an important role in food safety, because they should know how to handle their food, understand and interpret information contained on the label and understand the demand of safe behaviors by the food sectors [6].

### Food Safety-Historical Perspective

The history of food safety is almost as old as the mankind; it began when the humans understood that there are certain foods that were naturally poisonous to him [1].

Throughout history, humans, probably by “trial and error”, realized that it was possible to make food safe, through basic forms of conservation using drying, salting, fermentation, among others.

As the eating behavior habits changed, food safety become more formal. For example, the laws of old State of Israel include reference to food that should be avoid, better food preparation methods and highlighted the importance of hygiene.

The recognition by Antoine van Leeuwenhoek of the existence of microorganisms which had an impact on food safety, the introduction of processes with the use of heat food, with the work of Appert Pasteur, together with advances in medicine have created the “boom” in the area of food microbiology, making this field an important stage to safer food, that continues nowadays [1].

### Food Safety-The Present

The several thousand years of experience in food safety, combined with over 150 years of studies in food microbiology with the latest techniques of molecular biology could have solved the food borne diseases issue. But the truth is the opposite scenario, because there was an increase in the notifications of this type of illness [4].

The food borne diseases caused by biological hazards is a growing public health problem. The developed countries, with implemented systems in food borne illness communications have documented a significant increase in the data [7]. This matter associated with recent studies of pathogens, biotoxins and chemical contaminants in food are a serious threat to health of millions of people worldwide [8].

A number of reasons have been presented in order to explain these results, in particular:

- The change in food consumption patterns;
- Correct/incorrect use of new kitchen equipment;
- Food globalization (i.e. ethnic foods);
- Changes in eating habits and commercial practices (i.e. weekly or monthly shopping versus the daily purchase);
- Increased consumption of food produced “outside of home”;
- Reduction of immunologic capacity of the consumers;
- Elongated discontinuity between food production and food consumption;
- Increased consumer awareness on food transmitted diseases;
- Changes in agricultural practices;
- Evolution and new appearance of food pathogens;
- Failure in governmental action;
- Neglect /ignorant consumers;
- Failures in management practices;
- Unrealized multidisciplinary research approach [1].

The strategy in food safety has been changing over time, today the control it's not done exclusively in the final product, currently the approach undergoes a preventive action with all the stakeholders in the food chain.

The success in the food safety field, at an operational level, arrived in the late 1970 with the self-control preventive system HACCP (Hazard Analysis and Critical Control Points), providing a strategic plan where the entire food sector's intervenient have an active role and responsibility [9].

### Food Safety-The Future

There are evidences that companies in the food industry that adopt a food safety management system, based on HACCP principles and prerequisite program, produce food with better microbiological quality [1]. However, we must consider that food safety management systems are only a part of a required interdisciplinary team within corporations.

The food safety system documentation explains the procedures, but how food handlers such do their tasks its part of a food safety culture almost non-existent in Portugal.

The organizational culture of food safety is influenced by several assumptions, including technical and functional conditions of the facilities and the availability of financial and logistic resources to the implementation of good practices.

Several studies show that the inappropriate food handling practices are implicated in almost 97% of the original food borne diseases, both in the food industry as in domestic practices [1].

The food safety management system is a dynamic process and since 2004, the HACCP system is part of the legislation in several countries, including Portugal. However the recognition of the importance of the human behavior in the food safety organizational culture is requiring the elaboration of new guidelines in order to promote safer food [9].

These new strategies include applying psychological models, as social cognition and analysis of human error models, to predict, change and improve food handlers' behavior, among others. The practical application of the food safety fundamentals in real work context, allows the food handlers to be involved and to understand the information. This approach

will provide a communication model that is more complete, concise and effective.

The food safety publicity for consumers have been, to the date, unstructured and uncoordinated. As expected, in the future, new initiatives in order to raise consumer awareness on this theme, together with social marketing approaches to target populations [1].

The food business sector continually improves standards in food safety, although in a short-term is not envisioned as a financially attractive option. Economic operators in the food sector should understand the cost-benefit of providing safer food, because the consumer is aware that it's an importance and crucial matter, and his willing to pay for the difference.

The consumer's choice must be intrinsically linked to food safety, because only the recognition of the relationship between consumers' individual behavior and the safety of the food sector will create a greater understanding of organizational culture models for food safety.

### Food Safety-WHO, 2015

Every year the World Health Organization selects an area of global concern for the health, in the 7<sup>th</sup> of April, WHO's anniversary, the theme for World Health Day 2015 was “Food Safety”.

The new threats to food safety arise, increasing the risk of contaminated food intake, particularly by food production, distribution and consumption changes (i.e., intensive agriculture, the globalization of food trade, “street food “; etc.); environmental changes; emerging biological hazards; antimicrobial resistance, etc.

The WHO has an important role in mutual support and encouragement of all countries to prevent, detect and respond to outbreaks of food borne diseases, in line with the *Codex Alimentarius* [3].

In this context, the Health's World Day of 2015 was an opportunity to alert government agencies, manufacturers, retailers and the general public to the importance of food safety and the role that each individual in ensuring that the available food is safe for humans, from the “field to the plate”.

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