

Application of Food Additives in Food Production in the Context of Food Safety Incidents

Hongming Han

School of Saint Stephen's College, Gold Coast, Australia

Abstract

In recent years, my country's food safety emergencies have continued one after another. From melamine, clenbuterol, plasticizers to leather milk, food safety constantly touches people's sensitive and fragile nerves, which not only seriously endanger the health of consumers, but also It has caused huge economic losses to the society. One of the important reasons for the outbreak of these food safety incidents is the lack of preventive food safety risk management measures, among which food additives have become the most worrying food safety risk factor for consumers. Consumers' misunderstanding of food additives has affected economic development and social stability. Let the society and the public have a correct understanding of food additives and food safety issues, and supervise and manage the scientific and rational use of food additives by food production enterprises are all issues that need to be solved urgently.

Keywords

Food Safety; Events; Food Additives; Production.

1. Introduction

With the rapid development of China's social economy, the food industry has also maintained a trend of rapid development. The demand for quick-frozen, convenient, leisure and functional food has increased, and the industrialization and modernization of Chinese staple food and dishes have gradually been realized. Driven by the food industry, the food additive industry has broad development prospects and presents several major trends of nature, nutrition, multi-function and compounding. The food industry chain "from farmland to table" covers raw material production, raw material processing, food storage, food circulation and food sales. There are many links in the whole food chain, which are interdependent. If any link goes wrong, it will cause food insecurity and endanger the health of consumers. Absolute safety is not realistic. China's food safety problems still occur from time to time[1]. Consumers' sense of food safety is very poor. There are different opinions on food safety problems, and the food safety situation is still very serious. When used correctly, food additives can improve the taste and quality of food, and do no harm to human body. If used incorrectly, it will lead to food safety accidents. At present, there are still many problems in the use of food additives in the production process. Only in the process of food production can production enterprises improve their awareness of self-discipline by learning laws and regulations such as the food safety law. Carefully study the standards for the use of food additives, correctly understand the scope and amount of food additives, avoid the accidental addition of illegal food additives in food and the addition of food additives in excess of the scope, and properly supervise the use of food additives in order to ensure food safety[2].

2. About food safety

2.1 Food Safety Factors.

The food supply chain is divided into four stages: agricultural product production, food processing, food circulation and catering/consumption. According to these four links, the data are preprocessed, the occurrence links of each event are identified and classified, and the risk distribution of the event sample is obtained, as shown in Figure 1. It can be seen from the figure that food processing is a frequent occurrence of food safety accidents at present, which is related to the characteristics of complex technology, complicated procedures, low entry threshold and large number of enterprises in the food processing industry[3].

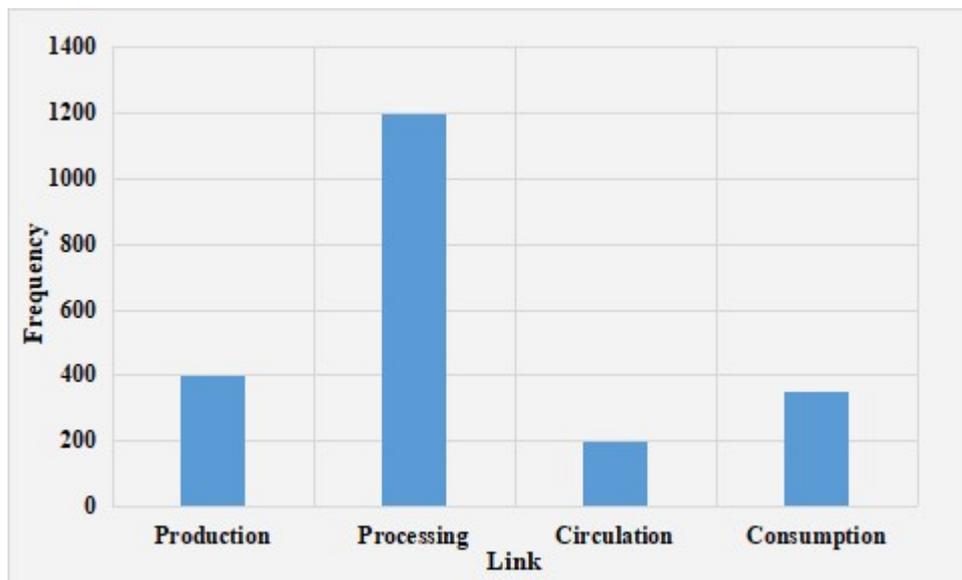


Figure 1. Statistical distribution of the frequency of occurrence of food safety incidents in each link

This paper selects 40 websites in three categories: government industry websites, professional food industry websites and news media. After extensive collection and screening for repeatability and effectiveness, a total of 3300 effective events from 2018 to 2020 are obtained. The food types, regions, occurrence links and the scale of the responsible subjects of the event are completely random, and there is no emphasis on one aspect. Therefore, the selected event samples can basically reflect the overall situation of current food safety[4]. Through investigation and statistics, it is found that the factor of "using unsafe excipients" accounts for the largest proportion of food safety problems, accounting for 46.7%, mainly due to the excessive use of additives, preservatives and other toxic and harmful substances. The second is the "unsanitary processing environment", accounting for 20.2%, which is mainly caused by the unsanitary processing environment of some small enterprises or individual workshops. The proportion of "using unqualified raw materials" is also high, 12.9%, mainly due to the use of waste, such as sick and dead pigs, expired food, or the use of inferior unqualified raw materials, shoddy and so on. Then came "unqualified packaging", "pesticide and veterinary drug residues" and "unqualified catering places" in the consumption link[5].

2.2 Current Status of Food Safety Issues.

Food safety is a complex system engineering. In the whole chain of food production, processing, circulation and consumption, there may be different degree of risk factors in every link, and every link should be well done. However, the current food safety problems still exist, mainly as follows:

(1) The high complexity of food safety issues. In the production of raw materials, water pollution, land pollution, air pollution and heavy metal pollution will pose the most direct threat to food safety. Food safety problems caused by raw material pollution are no less than those caused by food

processing. In terms of raw material processing, the overall situation of food processing enterprises is large in number, small in scale, scattered in operation, irregular in processing process, and poor in health guarantee ability[6]. In addition, the way of food storage and circulation needs to be improved, and the secondary pollution during transportation will also bring harm to food safety. In the process of food sales, some producers and operators still have the phenomenon of selling expired fake and shoddy food, and some sales terminals can't guarantee to store food according to the requirements due to limited conditions[7].

(2) Weak scientific and technological foundation and inadequate supervision have resulted in frequent occurrence of food safety incidents. The overall framework of the food safety standard system is still unreasonable, and the scientific nature of food safety standards needs to be improved urgently. The current food safety monitoring system is not yet perfect, and food testing also has problems such as insufficient investment, scattered resources, and low testing level, which seriously affect the scientificity, timeliness and accuracy of supervision work. To ensure product quality and safety, the most important thing is to start from the source[8].

(3) Food safety incidents occur from time to time due to the weak legal awareness of individual food production and operation enterprises. A small number of food production practitioners lack moral integrity and lack of legal awareness. The production and sale of counterfeit goods driven by interests is also a reason for the occurrence of food safety incidents.

3. Application of Food Additives in Food Production

3.1 Definition of Food Additives.

Food additives refer to synthetic or natural substances added to food for the purpose of improving food quality, color, aroma and taste, as well as for preservation, preservation and processing[9]. The use of food additives should meet the following basic requirements, as shown in Figure 2: (1) It should not cause any health hazard to the human body; (2) It should not cover up the spoilage of food; (3) It should not cover up the quality defects of the food itself or the processing process. Or use food additives for the purpose of adulteration, adulteration or forgery; (4) The nutritional value of the food itself should not be reduced; (5) The use amount in food should be reduced as much as possible on the premise of achieving the intended purpose.

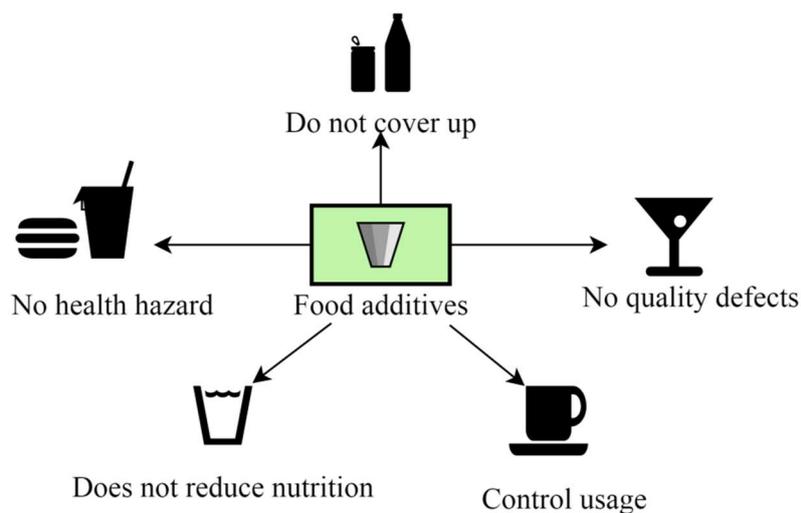


Figure 2. Requirements for the use of food additives

The use of food additives is strictly evaluated and tested, and can only be used after a series of toxicological experiments prove that it is harmless to human body. Adding reasonable preservatives can prevent spoilage caused by microorganisms, prolong the shelf life of food, and maintain the

nutrition of food. Antioxidants can prevent or slow down the oxidative deterioration of food, avoid the loss of nutrients, and improve the stability and storability of food. In addition, properly adding food nutrition fortifier to food can greatly improve the nutritional value of food, prevent malnutrition and nutritional deficiency, improve people's health level and ensure the nutritional needs of special people. Therefore, food additives should have been the guardians of food safety, but now they seem to have become a "scourge" that people talk about and avoid. This is mainly due to the lack of correct understanding[10].

3.2 Food Safety and Food Additives.

The study found that consumers' gender, age, education level and income level all affect consumers' perception of food additive safety risks, and consumers with higher education level have more accurate and rational perception of food additive risks. Consumers' sense of safety about food additives is largely affected by their cognition of food additives. Most people don't really know what food additives are and what functions they have. They blindly listen to others' remarks, have a sense of fear of food additives, and blame food additives for food safety. Food additives have become scapegoats for food safety problems. In fact, we used to use a lot of food additives, but now we are using them, and there will be more varieties in the future. Researchers believe that helping consumers understand food additives is the demand of consumers, and strengthening consumers' understanding of various food additives can better enhance their sense of security.

3.3 Proper Use of Food Additives and Advice on Maintaining Food Safety.

For a long time, some producers have been unclear about the distinction between food additives and non-edible substances, or in order to reduce costs for personal interests, ignoring laws and regulations, adding substances that are not allowed to be used in food. Melamine, Sudan red, clenbuterol and peacock blue, which have been repeatedly exposed in recent years, are not food additives. These illegal acts not only pose a huge threat to people's health, but also damage the image of food additives in the minds of consumers. Therefore, food production enterprises should use food additives correctly, and the state and government should also guide enterprises and the public to correctly understand and use food additives, starting from the following aspects:

- (1) Improve the construction of laws, regulations and standard systems for food additive management. The safety of food additives is conditional, not absolute, and the correct use of additives is necessary to better maintain food safety. However, the national food additive standard system is not perfect enough, which makes some enterprises take advantage of it and do not use food additives in a standardized manner. It is very important to further improve the construction of laws, regulations and standard systems for the safe production, rational operation and correct use of food additives.
- (2) Strengthen the supervision and management of the production, operation and use of food additives. As a functional department, if you want to do a good job in supervision, you must first strengthen your understanding of relevant knowledge and technology, and secondly, you must implement the supervision work, not just a mere formality. For enterprises that violate the regulations and abuse food additives, economic penalties should be increased to increase the cost of violations.
- (3) Improve the legal awareness and safety responsibility awareness of food-related enterprises. Complying with the "Food Safety Law" and other laws and regulations to ensure the quality and safety of food production is the legal awareness and safety responsibility awareness that every food business operator should have. Improving the enterprise's own legal awareness and safety responsibility awareness is conducive to improving product quality and safety at the source and preventing unqualified products from entering the market and causing harm.
- (4) Strengthen technological innovation and development of new food additives. Natural, nutritious, multi-functional, and compounded are the future development trends of food additives. New food additives can eliminate the harm of some traditional food additives, and are also of great significance to maintaining food safety. The quantity and quality of food additives need to be continuously

improved to meet the objective needs of the development of the food industry, and more scientific research needs to be invested in this aspect.

4. Conclusion

In the current food safety issues, food additives are often involved, and consumers' lack of understanding has led to various misunderstandings about food additives. It is necessary to let consumers understand through scientific facts that the use of food additives is an objective need to improve food quality and ensure food safety; There can be no food safety either. Further improve the construction of laws, regulations and standard systems for the management of food additives, strengthen the supervision and management of the production, operation and use of food additives, improve the legal awareness and safety responsibility awareness of enterprises, strengthen technological innovation and the development of new food additives, strengthen popular science propaganda and correctly guide consumption Consumers' consumption concept will help to solve the current problems in the use of food additives, not only to promote the healthy development of food additives and food industry, but also to ensure that food additives better serve food safety.

References

- [1] Li Shuguang, Chen Lili, Chen Bo. Analysis of food safety incidents exposed by media in my country from 2004 to 2012 [J]. Journal of Chinese Food Science, 2018(3):8.
- [2] Zhang Hongxia, An Yufa, Zhang Wensheng. Identification, Assessment and Management of Food Safety Risks in my country: An Empirical Analysis Based on Food Safety Incidents [J]. Economic Issues Exploration, 2018(6):7.
- [3] Wang Yu. Media presentation of food safety incidents: current situation, problems and countermeasures-taking the relevant reports of People's Daily as an example [J]. Modern Communication, 2010.
- [4] Zhang Jianzhou. Application and supervision of food additives in food production [J]. Food Engineering, 2017(2):3.
- [5] Li Ping, Song Shuping. Problems and suggestions of food additives in food production [J]. China Food Industry, 2021(16):56-58.
- [6] Yang Jufen. Talking about the application of food additives in food production [J]. Food Safety Guide, 2018(4X):2.
- [7] Zou Zhifei, Xi Jing, Xi Xinglin, et al. Introduction of foreign food additives regulations and standards [J]. China Journal of Food Hygiene, 2019(8):12.
- [8] Zhang Lei, Zhang Xuejun. On the application and development of food additives [J]. China Condiments, 2021, 36(1):4.
- [9] You Xin, YOU Xin. Analysis of the development trend of the world food additive market [J]. China Food Additives, 2019(5):43-45.
- [10] Sun Xiaohui, Liu Fengdong, Sheng Honggao, et al. On the Safe Utilization of Food Additives [J]. Chinese Journal of Hygiene Supervision, 2018, 13(004):285-287.