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Follow the Hygienic Standard of Food Additives in Develop and Produce Nutritive Dairy Products

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Abstract: The use of food additives is directly related to food safety. Therefore, it is of great significance to explore the use specifications and scientific use strategies of food additives in the process of developing and producing nutritional dairy products based on the health standards of food additives. The purpose of this study is to promote the scientific use of food additives in the production of nutritional dairy products to avoid food safety problems. In this paper, first of all, food additives are summarized, and their connotation and specific principles of use are mainly discussed. Then, the connotation and significance of nutritive fortifier are introduced. Then, based on the investigation of food additives, the application, safety and problems of food additives were analyzed. In this technology, combining the existing research data and the "Hygienic Standard for the Use of Food Additives", the scientific use strategy of food additives in the development and production of nutritional dairy products was put forward, and the measures to improve the safety of nutritional dairy products were discussed. The experimental results show that from 2015 to 2019, the application proportion of food additives in China's food production increases gradually, from 71.32% in 2015 to 87.65% in 2019. In addition, the safety of food additives increased from 52.41% in 2015 to 67.45% in 2019, but the overall safety of food additives is still relatively low.

1. Introduction

With the continuous improvement of living standards, people have higher and higher requirements on the quality of food, which requires both delicacy and safety. Due to the continuous progress and development of biotechnology, the types of food additives are increasing, and the scope of their application in food production is also expanding [1-2]. The use of food additives has both advantages and disadvantages. On the one hand, it can increase rich taste experience and prolong the quality of food. On the other hand, the wrong use of food additives also brings a series of food safety problems, posing a threat to people's health [3]. As one of the essential foods in People's Daily life at present, nutritional dairy products can provide relatively sufficient nutrition

and energy for human life and work [4]. Based on the hygiene Standards for The Use of Food Additives, to explore the correct use of food additives in the production process of nutritional dairy products can not only promote the continuous improvement of the safety of nutritional dairy products, but also further improve the nutritional value [5].

As food additives are closely related to food safety issues, the use of food additives has always been the focus of public concern [6]. The big head doll incident of Sanlu milk powder occurred in earlier years is the result of the illegal use of food additives. At present, domestic and foreign scholars have carried out a series of studies on food additives and achieved certain research results [7]. In literature [8], based on the use risks and existing problems of food additives, the author puts forward specific measures to improve the food safety system from the perspective of use control and use cognition. In literature [9], the author discusses the necessity of using food additives from the perspective of the significance, harm and specific use of food additives, aiming to guide consumers to establish a correct understanding of food additives. In literature [10], the author first introduces the knowledge related to food additives, then analyzes the main problems existing in them, and then puts forward specific measures to solve the problems from the perspectives of food testing, standardized use and supervision. To sum up, at the present stage, food additives are usually investigated together with food safety issues, and few studies involve the standard use of food additives in a specific type of food. From this point of view, there are still some theoretical gaps in the relevant research.

In order to make up the theoretical gap in this field, this paper firstly gives an overview of food additives, focuses on its connotation and specific principles of use, and then introduces the connotation and use significance of nutritive fortifier. Then, based on the investigation of food additives, the application, safety and problems of food additives were analyzed. In this technology, combined with the existing research data and the "Hygiene Standards for the Use of Food Additives", the scientific use strategy of food additives in the development and production of nutritional dairy products was proposed, and the measures to improve the safety of nutritional dairy products were discussed [11]. The study in this paper, on the one hand, promotes the correct use of food additives in the production of nutritive dairy products, and on the other hand, lays a theoretical foundation for the subsequent studies in related fields [12].

2. Theoretical Basis

2.1. Overview of Food Additives

(1) Connotation of food additives

In the process of producing food, the producer must add the substance in the food, the general purpose of food additives is to make food quality in a period of time to be maintained. However, compared with other types of nutrients contained in food, food additives have relatively low nutritional value. The Hygienic Standard for the Use of Food Additives defines food additives as natural and chemical synthetic substances added in the process of food production to promote the improvement of food quality, color and flavor, prevent food decay and to meet the needs of processing technology. Food has rich nutritional value, which can provide people with nutrition and energy to ensure the normal activities of human life. However, fundamentally, food additives do not have the effect of food itself. In the process of developing and producing food, additives are added to food in order to improve the appearance and taste of food and enhance its appeal to consumers. In addition, the type and content of food additives that can be ingested by different people are different, so food additives have higher requirements and specifications. In general, the classification of food additives is relatively complex, according to different classification standards, food additives can be divided into different categories. According to the specific source, food

additives can be divided into chemical synthesis and natural two; According to their functions, food additives are mainly divided into preservatives, colorants and antioxidants. According to its safety performance, food additives can be divided into three levels, of which class A additives have the highest safety, followed by Class B, and Class C additives have the lowest safety. As mentioned above, food additives have relatively high use specifications and requirements, and the following points should be noted in the selection process: First, non-food additives cannot be used as substitutes; Second, additives that fail to meet food hygiene standards must not be used. Third, the food additives used cannot break down toxic substances.

With the continuous maturity of relevant technologies, the food additive industry has gradually evolved into a relatively important refined industry, which plays a good role in promoting the high level and rapid development of the food industry. Countries with relatively developed food industry are western shelves, and China is currently in the stage of rapid development of food industry. At this stage, China's food additive industry presents the overall characteristics of small scale and low technical level. However, with the continuous progress of this technology, China has gradually realized large-scale production in many types of food additives, such as xylitol, vitamin C, etc., and got rid of the situation that food additives were all dependent on imports.

(2) Use principle of food additives

The standard use of food additives, to minimize the harm of food additives, must strictly follow the principles of the use of food additives, the use of specific principles include the following aspects: first, the use of food additives will not harm human health. Any food additives harmful to human health should be eliminated. Second, food additives should not be used as a cover for spoiled food. This principle is mainly for preservative-type food additives; Third, the use of food additives for the purpose of not to cover up food quality defects or food adulteration; Fourth, food additives should not be used at the expense of the nutritional value of the food itself. That is, under the premise of maintaining the nutritional value of food, add relevant additives.

2.2. Nutrient Fortifiers and Their Foods

(1) Nutrient fortifier

Nutritive fortifier is a special kind of food additive which occupies an important proportion in nutritive dairy food additive. One or more nutrient elements or some natural foods are added to the food according to nutritional requirements to promote the overall nutritional value of the food additive is called nutrient fortifier. Such foods that are processed through fortification are called fortified foods. Nutrients added to food or substances containing nutrients, whether artificial or natural, can become nutrient enhancers. At first, scholars proposed fortification programs to address public health concerns. The purpose of nutrition reinforcement is to provide comprehensive and adequate nutrition for human growth and life, to meet the needs of normal human development to the maximum extent, and to promote the continuous improvement of their overall health level. The significance of nutrition reinforcement is mainly reflected in the following aspects: First, supplement the deficiency of natural things in nutrition to achieve balanced nutrition. There is hardly any one natural thing that provides all the nutrients the body needs at the same time. Due to the limitations of people's eating habits and production conditions, people can hardly get all the nutrients they need in their daily diet, and some deficiencies in nutrition usually occur. Nutritional fortification can effectively solve the nutritional deficiency in people's basic diet, thus reducing the probability of disease and promoting the continuous enhancement of one's own physique. Second, to make up for the loss of nutrient elements, to ensure the natural nutritional characteristics of food. Loss of nutrients is common during food processing and storage. Flour, for example, loses a large proportion of its Vitamin B1 during fine processing. Nutrient loss varies greatly depending on the

processing method. Adding nutrient fortifiers to food production can minimize the loss of nutrient elements. Third, simplify food processing and increase convenience. As mentioned above, a single food cannot provide all the nutrients needed by the human body. In order to obtain more comprehensive nutrients, it is necessary to obtain multiple foods at the same time. Due to the wide range of recipes, the processing is relatively complex. The use of nutritive food fortifier can simplify the process of food processing and greatly improve the simplicity of food processing. Fourth, meet the special needs of the profession. Some occupations, due to the relatively special working conditions, require some special food with high energy and nutrition to provide working energy. But different kinds of jobs require different kinds of nutrition. Therefore, the use of nutritive fortifier in food is particularly important, and its application is gradually expanding at the present stage. In addition to these implications, some types of fortifiers can also improve the quality of the food experience and storage performance. Take vitamin E as an example, it can not only improve the nutritional value of food, has a good antioxidant effect. Nutritive fortifiers can be divided into three categories: vitamins, minerals and amino acids.

(2) Fortified foods

Nutritionally fortified food refers to the food with specific amount of nutritive fortifier added to the food according to the different needs of different populations and the needs of maintaining and improving the nutritional elements of the food itself, so as to improve the nutritional value of the food. According to the different purposes of fortification, food fortification can be divided into five categories: fortification, standardization, restoration of nutrients, and vitaminization and functionalization of food. The ways of food fortification are also different, which can be divided into processing process, raw materials, finished products mixed, physical and chemical fortification and other ways. According to the different purpose of fortification, food attributes, etc., the choice of food fortification methods should also be different. Nutritional dairy products is one of the common fortified foods, is added in the general dairy nutrition type of food additives, so as to promote the enrichment of nutrients and the increase of nutrient elements, compared with general dairy products, nutritional dairy products tend to have higher nutrition value, can satisfy the human body needs many kinds of nutrition.

3. Investigation and Experiment of Food Additives

In order to explore the specific plan of developing and producing nutritive dairy products according to the hygienic standard of food additives, the author conducted the investigation and experiment of food additives. The investigation and experiments in this paper are mainly divided into the following parts: First, the "Hygienic Standard for the Use of Food Additives" and the collection and understanding of relevant data. The research of this paper is based on the in-depth understanding of the hygiene standards of food additives. For this reason, the author collected relevant data, read the content in detail, and made a deeper understanding of it by referring to relevant interpretation data. Second, the use of food additives status of the investigation. This part of the survey mainly adopts the form of website data collection and questionnaire survey to collect data. The objects of the questionnaire mainly include personnel of food safety supervision departments and food manufacturers. The contents of the questionnaire include the proportion of food additives used, problems of use and safety. A total of 100 questionnaires were issued in this part, and 89 valid questionnaires were recovered eventually. Thirdly, analysis on the use of nutritive fortifier. This part of the survey is mainly conducted by online questionnaire survey. The respondents of the questionnaire were mainly dairy producers. Fourth, statistical analysis of experimental data. After the end of the investigation and experiment, SPSS statistical software was used to make statistics on the experimental data, and the computer graphics software was used to

draw data charts. Based on the detailed analysis of the data charts, relevant experimental conclusions were drawn. In addition, in order to ensure the accuracy of the conclusions obtained in this paper, nutritional dairy products for the correct use of food additives provide scientific guidance, the author also query the ten thousand side, knowledge network and VIP database, data on the existing research data collection, a total of 121 related papers, to the research of the paper and collection of the data.

4. Application of Food Additives

4.1. Survey Results

Through the above investigation and experiment on the use of food additives, the author finally obtains the following experimental data. The specific experimental data are shown in the chart. All the experimental data are the results of the author's experimental collation.

(1)Current situation of the use of food additives

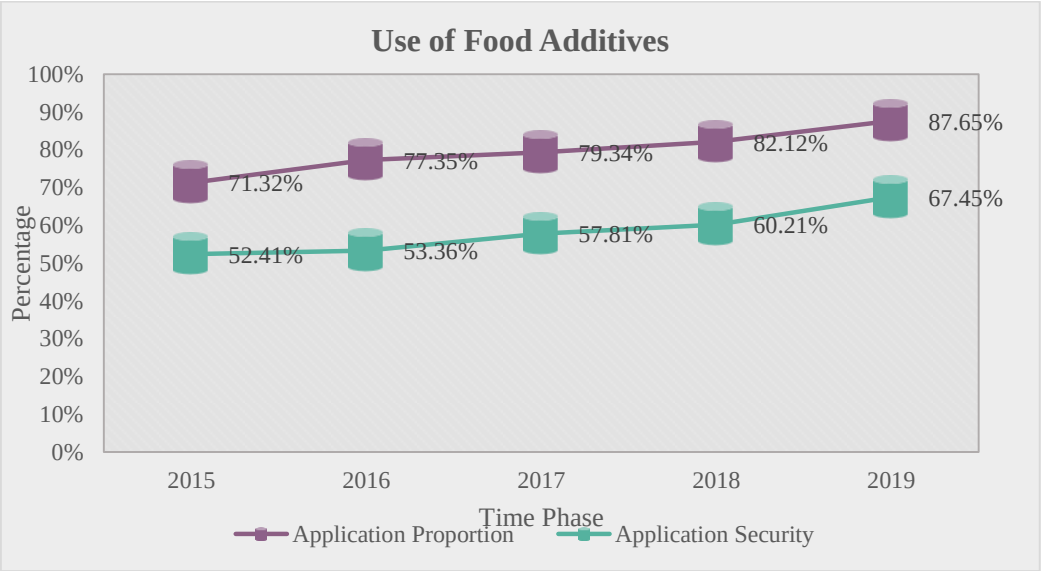

Figure 1. Use of food additives from 2015 to 2019

Figure 1 shows the statistics of the use of food additives in China from 2015 to 2019. From the data in the figure, we can see that the application proportion of food additives in China's food production gradually increases from 71.32% in 2015 to 87.65% in 2019. In addition, the overall safety of food additives is also on the rise, rising from 52.41% in 2015 to 67.45% in 2019. However, the overall safety of food additives is relatively low, which should be related to the problems in the use of food additives.

(2) Analysis of application problems of food additives

Figure 2 shows the analysis of the main problems in the use of food additives in China at the present stage. From the data in the figure, we can see that the problems in the application of food additives in China at the present stage are mainly reflected in the incorrect use, blind use and low quality, accounting for 27%, 31% and 28% respectively. The following author will elaborate on these three aspects of the problem: first, improper use of additives. At present, most of the additives used in China's food are produced from non-edible substances, which are relatively harmful and greatly increase the risk of food safety. However, in order to pursue higher economic benefits, some food production enterprises fail to properly use food additives in accordance with relevant regulations. This practice not only violates relevant regulations, but also poses a serious threat to

consumers' life and health, which is not conducive to social development and stability. Second, blind use of food additives. Food additives can greatly promote the extension of the effective edible date of food and bring higher economic benefits to food manufacturers. However, if its use is inconsistent with the relevant regulations, it is difficult to ensure food safety, and in serious cases, it will cause harm to people's health. At present, many manufacturers blindly use preservatives to extend the date. Third, the quality level of food additives is low. Based on the background of the rapid development of China's current food industry, the types of food additives are diversified, but their functions are basically the same. In order to reduce the cost of food production and promote the continuous improvement of production profits, most manufacturers often choose additives with low prices for purchase. Generally speaking, such additives with low prices have low quality level, great harm and are easy to cause food safety problems.

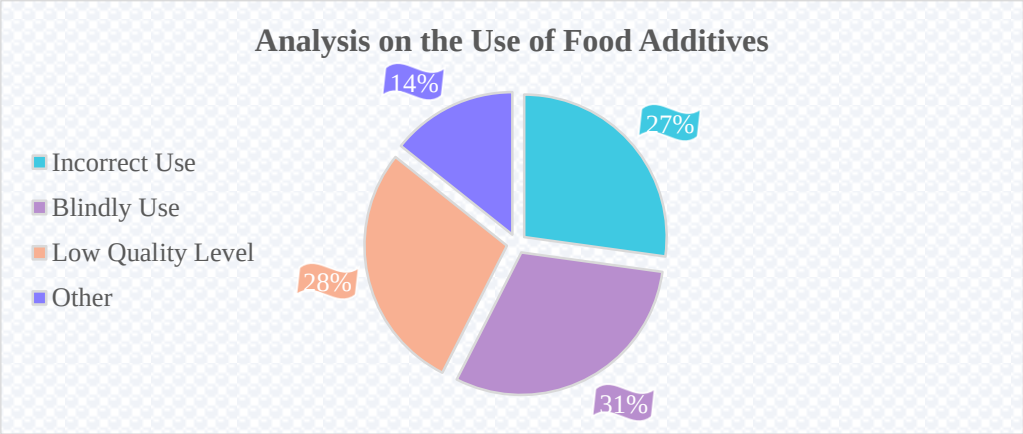

Figure 2. Analysis of the use of food additives

(3) Analysis of the use of nutrient fortifiers

Table 1. Statistics of types of dairy products that can be fortified with nutrition

Year	Dairy foods that are nutritionally fortified are allowed	Total category
1997	Infant formula powder, infant formula food, milk and milk beverage, maternal formula milk powder, dairy products	5
2004	Preschool children's formula food, children's formula milk powder, fresh milk, milk powder	9
2009	Soy milk powder, soy milk, milk containing solid drinks	12
2014	Liquid milk, yogurt	14
2018	Modulation milk	15
*Data are based on the results of an experimental investigation		

Table 1 shows the statistics of the types of dairy products that can be fortified with nutrition. It can be seen from the data in Table 1 that with the development of time, the types of dairy products that can be fortified with nutrition are increasing. In 1997, there were only 5 types of dairy products that could be fortified with nutrition, and in 2018, the number increased to 15. On the one hand, it shows that the production level of nutritive fortifier is constantly improved and its application scope is gradually expanded. On the other hand, the types of dairy products are also increasing.

Figure 3 for nutrition fortifier use ratio data, data to be able to see from the table, the 2015-2019, nutrition enhancer and dairy products in their respective application proportion in the whole foods are rising, Its overall use in food rose from 54.13% in 2015 to 65.21% in 2019, and its application in dairy products rate rose from 47.31% in 2015 to 66.24% in 2019. Figure 4 for nutrition fortifier USES the nutritional value of data, data to be able to see from the table, the nutrition fortifier USES the nutritional value of overall level is higher, at about 75%, and with the continuous development

of time and the progress of technology, its nutritional value is also in constant ascension, gradually rising from 70.21% in 2015 to 83.74% in 2019, but its real nutritional value is to achieve the ideal effect, need further improvement.

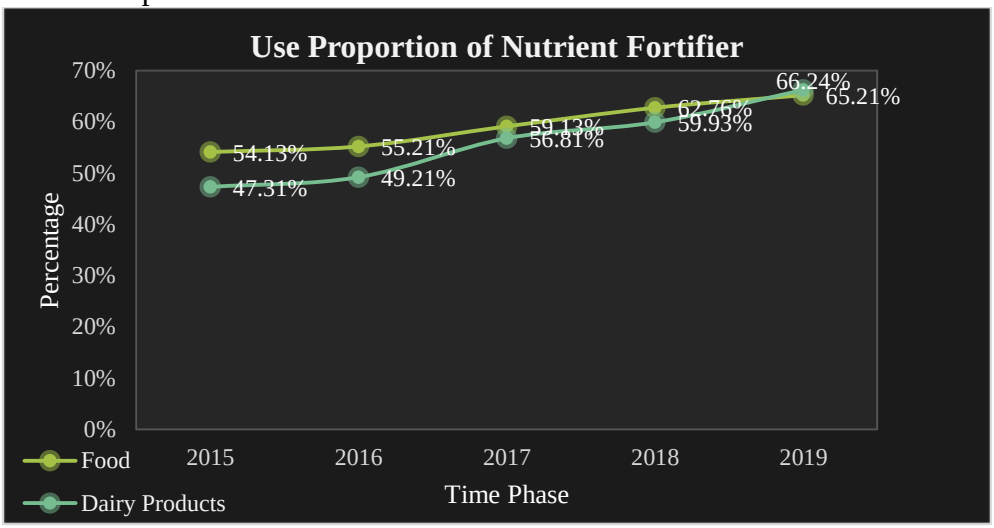

Figure 3. Proportion of nutritive fortifier used

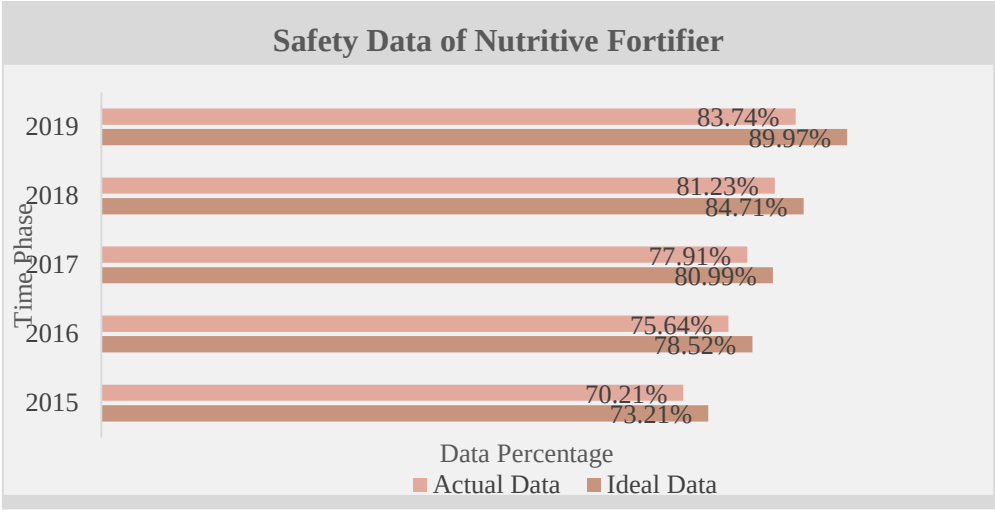

Figure 4. Data of application value of nutritive fortifier

4.2. Scientific Use of Food Additives in Nutritional Dairy Products

According to the hygiene standards of food additives and the problems existing in the actual use of food additives at the present stage, the author believes that to realize the scientific use of food additives in nutritional dairy products, the following problems must be paid attention to in the development and production of nutritional dairy products:

(1) Application of nutritional fortifiers in each product should be targeted

The experimental results of nutrition at the present stage show that the human body has different demands for nutrition elements due to different age, gender, living environment, labor intensity, labor nature and physiological state, and the human body's ability to accept food is even more varied. In the case of infant formula milk powder, milk is a newborn thing, it is the ideal dairy things breast milk, mother when the lack of breast milk or for other reasons can't breastfeed, you must choose the cultivation of the human production of dairy products for newborns fed, this kind

of dairy products is reference GBl0766, GB10767 regulation such as research and development production. R&d and production of infant formula milk powder is not only to scientific and reasonable to the baby all the nutrients they need to grow the adding and strengthening, and will ensure that these nutrients can be absorbed by digestive system of the infant good, make its role and milk as consistent as possible, this is the research and development producer in the product research and development to achieve. Therefore, nutritional dairy products face different groups of people, its specific targeting should also be adjusted according to specific groups. Foods for the elderly, pregnant women and children, for example, need to be targeted at the right people. To this end, the production and development of food personnel can use the Chinese Nutrition Society "recommended daily nutrient supply quantity" and "Chinese residents dietary nutrient reference intake" as a reference for food production, so as to further ensure the scientific use of food additives and the scientific supply of nutrients.

(2) Pay attention to the effects of food additives of various USES on food nutritional elements

The hygienic standards of using food additives in the list of some additives, these additives can be used in the process of research and development production of dairy products, but its USES are diversity, on the one hand to adjust acidity and stable emulsion, anti-oxidation, but on the other hand, these food additives on the number of nutritional dairy products contain nutrients have influence. Therefore, in the evaluation of the nutritional effect of food additives, the above factors should be fully considered, so as not to produce omissions, resulting in insufficient nutrient element content, affecting the nutritional effect of food.

(3) Pay attention to the application of functional food additives other than nutrients

The hygienic standards of using food additives, to constantly improve the kinds of food additive, and found there are other types of material in the food additives, experts generally believe that these substances is beyond the scope of nutrients contained, but these substances can effect and human body, can produce some kind of physiological function. For example, casein phosphopeptide can help to absorb calcium and promote lactose isomerization, thus significantly promoting the growth of probiotics in the intestinal tract, realizing the regulation of the proportion of the intestinal microbial population, and finally realizing the good maintenance of intestinal function. Carnitine can carry fatty acids into mitochondria and realize energy release based on oxidation, providing sufficient energy for the body. Nucleotides can promote the good development of intestinal tract and help maintain intestinal function. Lactoferrin and immunoglobulin can improve the overall resistance of the body. The addition of these substances in nutritive dairy products can shorten the period of infants' adaptation to formula milk powder, realize the effective absorption and utilization of nutrients in food, and help infants to grow healthily.

To sum up, the Hygienic Standard for the Use of Food Additives is a serious matter concerning human health, and there are many problems needing attention. Production r & D personnel must strictly follow its regulations, and use the learned nutrition knowledge and mature and advanced production technology, to produce more safe and nutritious nutritional dairy products, so as to constantly meet the needs of modern life.

4.3. Measures to Improve the Safety of Nutritional Dairy Products

(1) Ensure the standard use of food additives

The development and production of nutritional dairy products should ensure the standard use of food additives to ensure the final production of dairy products with absolute safety. Besides, manufacturers must strictly abide by relevant laws and regulations, and it is strictly prohibited to add other kinds of food additives in nutritious dairy products. Continuously strengthen the training of technical personnel, promote the continuous improvement of food safety awareness of r&d and

production personnel, so that they have a full and detailed understanding of the correct use of food additives, to avoid substandard food in the market. Fully ensure the authenticity and standardization of product identification, so as to protect consumers' right to know products, so that enterprises can establish a good corporate image in front of consumers, so as to expand the popularity of the enterprise brand.

(2) Strengthen the detection of food additives and optimize the food safety detection technology

At the present stage, the types of food additives continue to enrich, gradually showing a diversified development trend, the existing technology is difficult to achieve the detection of all types of food additives. Many businesses realize the insufficiency of detection technology at the present stage, and carry out illegal use of food additives, which promotes a large number of problematic food into the market, leading to the emergence of various food safety problems. Therefore, for the relevant testing departments, it is necessary to strictly test all types of food additives, and constantly promote the deep optimization of safety testing technology, to maximize the scientific and standard use of food additives, prevent the occurrence of inferior additives, comprehensive protection of consumer health and safety.

(3) Promote the establishment and improvement of the food additive safety evaluation system

To establish a safe and effective safety evaluation of food additives, the following points must be accomplished: First, the specific use specifications of food additives should be unified, so that their use has a unified standard. Therefore, all local governments should take an active part in the formulation of regulations in this field and make Suggestions to realize the continuous improvement of their standards of use. Second, timely food safety testing should be conducted to increase the intensity and frequency of testing, and the final food testing information should be released to consumers in a timely manner. Third, according to the actual situation of the food industry development in our country at present stage, promote the food additive safety evaluation system to establish and perfect, keep the strict supervision of producers, the strict according to the hygienic standards of using food additives were added, once appear, illegal add situation, must be severely punished, the greatest degree to ensure food safety, health and safety for consumer to form powerful guarantee.

5. Conclusion

Based on the concept and application principle of food additives and the investigation and experiment, this paper analyzes the current situation of the use of food additives, and finally draws the following experimental conclusions:

(1) The proportion of food additives in food production has been increasing, and the proportion of nutritive fortifiers in nutritious dairy products has also been increasing, but the overall use safety still needs to be improved. The low safety of food additives is caused by problems in their use. At present, the problems in the application of food additives in China are mainly reflected in the improper use, blind use and low quality.

(2) The author puts forward the scientific precautions for the use of food additives in nutritional dairy products from three perspectives: pertinences of application, attention to the impact of food additives of various USES on food nutritional elements, and attention to the application of functional food additives other than nutrients;

(3) The author discussed the measures to improve the safety of nutritive dairy products from three perspectives, including the use specification, food testing and the establishment of food safety evaluation system.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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