CONCEPTUAL FOUNDATIONS FOR ORGANIZING THE CONTROL OF TOXIC ELEMENTS IN FOOD PRODUCTS

Turdiyev A.E
Students,
Toshmuradov T.X.
Khalikova D.X.
Samarkand State University of Veterinary Medicine, Livestock and Biotechnologies
Tursunov G.S.,
Doctor of Agricultural Sciences (PhD)
nurmatovsherzod1988@gmail.com
https://doi.org/10.5281/zenodo.15387811

Abstract: This article provides information on the potential risks to human life posed by toxic elements, which are one of the factors characterizing the safety indicators of food products. The authors also express their views on reducing toxic elements in food products.

Keywords: Food safety, toxic elements, hygienic standards, radiation safety.

Introduction. Today, providing the rapidly growing global population with high-quality, safe food products remains one of the major global challenges. According to the Food and Agriculture Organization of the United Nations (FAO), currently about 800 million people worldwide are undernourished, and 2 billion people lack the necessary nutrients in their diet (2).

In our country, addressing the food problem is considered a serious issue, and appropriate measures are being implemented. Moreover, this problem has drawn the attention of the international community. As evidence of our statement, we can cite the fact that at the initiative of the President of the Republic of Uzbekistan, Sh. Mirziyoyev, the 5th International Scientific and Practical Conference on "Food Security: Global and National Problems" was held in Samarkand on October 13-14, 2023.

Nearly 30 representatives from foreign countries such as the USA, Russia, Germany, Kyrgyzstan, and Tajikistan, along with more than 240 specialists and scientists from our republic, participated in this conference with their presentations on food security.

We approached food security from the perspective that heavy metals present in food products can pose a threat to human life. It is known that the food products we consume must meet the relevant safety requirements. One of the important indicators of food safety is the amount of toxic elements in their composition. Exceeding the established norms of these toxic elements can pose a threat to human health and life. Therefore, these indicators must be strictly monitored.

Control over the content of toxic elements in food products in the Republic of Uzbekistan is carried out in accordance with the Sanitary Rules, Norms, and Hygienic Standards of the Republic of Uzbekistan (Hygienic Norms for Food Safety, Ministry of Health Order No. 0366-19 dated May 25, 2019). These sanitary requirements and hygienic standards are developed based on the Laws of the Republic of Uzbekistan "On the Sanitary and Epidemiological Well-being of the Population," "On the Quality and Safety of Food Products," "On Radiation Safety," "On Protection of Consumer Rights," "On Technical Regulation," and Codex Alimentarius standards. They establish hygienic standards for food safety intended for human

consumption, as well as requirements for the preparation, import, and circulation of food products.

According to this regulatory document, the hygienic requirements for the permissible levels of toxic elements apply to all types of food raw materials and food products.

As per the Ministry of Health of the Republic of Uzbekistan Order No. 0366-19 dated May 25, 2019

The permissible levels of lead, arsenic, cadmium, mercury, zinc, and copper in food products of the Republic of Uzbekistan are presented in the table below.

No.	Food food group	Permissible content of toxic elements, (mg/kg), not more than					
		Pb	As	CD	Hg	Zn	Cu
1	Meat (all types)	0 , 5	0 , 1	0 , 05	0 , 03	70	5
2	Sausage products	0 , 5	0 , 1	0 , 05	0 , 03	-	5
3	Eggs and liquid egg products (melange, white, yolk)	0 , 3	0 , 1	0 , 01	0 , 02	-	0
4	Raw milk, raw skim milk, raw to skim	0 , 1	0 , 05	0 , 03	0,005	5	1
5	Drinking milk, fermented milk products	0 , 1	0 , 05	0 , 03	0,005	5	1
6	Cheeses, cheese products	0 , 5	0 , 3	0 , 2	0 , 03	50	4
7	Fish and fish products	1 .0	1 , 5	0.2	0.03- 0.6	-	-
8	Food grains (cereals) grains)	0 , 1	0 , 2	0 , 1	0 , 3	-	-
9	Cereals , flour, bread and pasta products	0.5	0 . 2	0 . 1	0 , 3	-	-
10	Sugar and confectionery products	0.5	1	0.05	0.01	-	-
11	Tea (black, blue)	10	1	1	0.1	-	100
12	Fruits - vegetables and mushroom	0,05-0.3	0 , 2-0 , 5	0 , 03-0 , 1	0.02-0.05	10	5
13	Vegetable oils (all types)	0 , 1-0 , 2	0 , 1	0.05	0.03	-	0 , 4
14	Drinks	0 , 1	0	0 , 01	0,005	5	1

Analysis of the data in this table revealed that the permissible levels of toxic elements in different types of food products vary to a certain extent. Preventing contamination with toxic elements and controlling their levels in food products manufactured in our republic is a crucial issue; however, there are also numerous problems awaiting solutions in this regard. For instance, the system for controlling and coordinating food safety in our country is insufficiently developed, and the current legislation does not meet the requirements of international food safety organizations. The requirements are scattered across various documents and lack the capacity for effective risk management.

It should be specifically noted that there are discrepancies between the current sanitary rules, norms, and hygienic criteria of the Ministry of Health of the Republic of Uzbekistan (No. 0366-19 dated May 25, 2019) and technical regulations, most of which do not comply with the guidelines and standards of the Codex Alimentarius.

At present, there are limitations and obstacles in monitoring the activities of food enterprises. It is advisable to transition to risk assessment through inspection control of food enterprises and to maintain constant monitoring of the import of high-risk food products.

Conclusion. Overall, controlling toxic elements in food products is a complex, multi-stage process that requires integration of healthcare, ecology, technology, and economic sectors. In the future, effective systems aimed at preventing toxic elements from entering the food chain should be developed based on innovative technologies and scientific research. Additionally, it is crucial to establish effective cooperation between government bodies, scientific institutes, and producers in ensuring food safety. Thus, by improving the quality and safety of food products, it is possible to achieve a generally healthy lifestyle for society.

Constant monitoring of toxic substances in food products is an essential component of guaranteeing human health.

References:

1. Hygienic standards for food safety of the Republic of Uzbekistan, Ministry of Health No. 0366-19.
2. Collection of scientific papers from the 5th International Scientific and Practical Conference on the topic of "Food Safety: Global and National Issues," March 13-14, 2013, Samarkand