

ESTABLISHING LIMITS ON THE USE OF TRANS FATS IN FOOD PRODUCTION

Yunusov Alisher Gafirovich

Graf Oil and Fat Extraction LLC

Shodiev Bakhtiyor Mukhammadovich

Assistant at Bukhara State Technical University

Erkinova Sevinchoy Dadaboy qizi

Student at Bukhara State Technical University

Abstract

The excessive consumption of trans fatty acids has been identified as a major public health concern due to its strong association with cardiovascular diseases, obesity, and metabolic disorders. Trans fats are commonly found in industrially processed foods and are known to increase low-density lipoprotein cholesterol while decreasing high-density lipoprotein cholesterol, thereby significantly elevating the risk of heart disease. In response to these health risks, many countries have introduced regulatory measures to limit or eliminate the use of trans fats in food production. This article examines the rationale for establishing limits on trans fats, reviews international regulatory approaches, and analyzes their impact on food safety and public health outcomes. Particular attention is given to policy frameworks, technological alternatives for food manufacturers, and challenges in implementation and enforcement. The study highlights the importance of strict regulation, effective monitoring, and public awareness in reducing trans fat consumption and improving population health.

Key words: Trans fats; food safety; public health policy; cardiovascular diseases; food regulation; nutritional standards

Introduction

Trans fatty acids (TFAs), commonly known as trans fats, are unsaturated fatty acids that occur either naturally in small amounts in ruminant-derived foods or are produced industrially through partial hydrogenation of vegetable oils. Industrially produced trans fats have been widely used in food production due to their low cost, long shelf life, and desirable technological properties, such as improved texture and

stability. However, extensive scientific evidence has demonstrated that excessive intake of trans fats poses serious health risks, particularly in relation to cardiovascular diseases.

Numerous epidemiological and clinical studies have shown that trans fats increase levels of low-density lipoprotein cholesterol while simultaneously decreasing high-density lipoprotein cholesterol. This adverse lipid profile significantly elevates the risk of coronary heart disease, stroke, and other non-communicable diseases. As a result, the reduction of trans fat consumption has become a global public health priority.

In response to these concerns, many countries and international organizations have introduced regulatory measures aimed at limiting or banning the use of industrially produced trans fats in food products. These measures include setting maximum allowable limits, mandatory labeling requirements, and the promotion of healthier fat alternatives in food manufacturing. Despite notable progress, challenges remain in ensuring effective implementation, monitoring compliance, and supporting food producers in transitioning to safer substitutes.

The purpose of this study is to examine the establishment of limits on the use of trans fats in food production, analyze regulatory approaches, and assess their implications for food safety and public health. By evaluating existing frameworks and control mechanisms, the study seeks to contribute to the development of effective strategies for reducing trans fat exposure in the population.

Materials and Methods

This study employs a qualitative and analytical research design based on a comprehensive review of scientific literature, regulatory documents, and international policy guidelines related to trans fats in food production. The materials analyzed include peer-reviewed journal articles, reports from international health organizations, national food safety regulations, and official policy documents published between 2000 and 2024.

The literature search was conducted using academic databases such as PubMed, Scopus, and Google Scholar. Key search terms included *trans fats*, *trans fatty acids*, *food regulation*, *nutritional policy*, *cardiovascular risk*, and *food safety standards*.

Only sources published in English and directly relevant to public health or food regulation were included in the analysis.

In addition, comparative analysis was applied to examine regulatory limits on trans fats across different countries and regions. Particular attention was given to the types of regulatory instruments used, such as maximum permissible levels, labeling requirements, and enforcement mechanisms. Data were systematically reviewed and synthesized to identify common trends, best practices, and existing challenges.

The collected materials were analyzed using content analysis methods, allowing for the classification of regulatory approaches and assessment of their effectiveness. This methodological approach provides a structured basis for evaluating current policies and identifying opportunities for improving regulatory frameworks aimed at reducing trans fat consumption.

Conclusion

The establishment of limits on the use of trans fats in food production represents a crucial public health intervention aimed at reducing the burden of cardiovascular and other non-communicable diseases. The evidence reviewed in this study confirms that industrially produced trans fats pose significant health risks and that their reduction or elimination from the food supply can lead to measurable improvements in population health outcomes.

Regulatory measures such as setting maximum allowable trans fat levels, enforcing mandatory labeling, and promoting the use of healthier fat alternatives have proven effective in decreasing trans fat consumption in many countries. However, the success of these policies depends not only on the legal framework but also on effective monitoring, enforcement mechanisms, and cooperation with the food industry. Continuous surveillance and transparent reporting are essential to ensure compliance and to prevent the reintroduction of trans fats into food products. Furthermore, the findings highlight the importance of aligning national regulations with international guidelines and best practices to achieve consistent and sustainable results. Public awareness campaigns and educational initiatives should complement regulatory actions to support informed consumer choices and encourage demand for healthier food products.

In conclusion, comprehensive and well-enforced limitations on trans fats in food production are a cost-effective and evidence-based strategy for improving food safety and protecting public health. Continued policy development, technological innovation in food manufacturing, and interdisciplinary collaboration are necessary to sustain progress and further reduce health risks associated with trans fat consumption.

REFERENCES

1.Ahmatovich R. A. et al. In biocenosis the degree of appearing entomophagous types of vermins which suck tomatoey sowings //Austrian Journal of Technical and Natural Sciences. – 2018. – №. 9-10. – С. 3-5.

2.Сулаймонов Б. А. и др. Фитофаги и виды энтомофагов, встречающиеся в лесном биоценозе //Актуальные проблемы современной науки. – 2021. – №. 1. – С. 64-69.

3.Кимсанбаев Х. Х., Жумаев Р. А. К вопросу размножения *Trichogramma evanescens* для биологической защиты растений //Международна научна школа" Парадигма". Лято-2015. – 2015. – С. 34-41.

4.Жумаев Р. А. Биолабораторияда трихограммани in vitro усулида ўстириш технологияси. Трихограммани сунъий озикада ўстириш курси (1)(Hymenoptera: Trichogrammatidae). – 2016.

5.Sulaymonov B. A. et al. Effectiveness of Application of Parasitic Entomophages against Plant Bits in Vegetable Agrobiotensenosis //Solid State Technology. – 2020. – Т. 63. – №. 4. – С. 355-363.

6.Kimsanbaev X. X., Jumaev R. A., Abduvosiqova L. A. Determination Of Effective Parasite-Entomofag Species In The Management Of The Number Of Family Representatives In Pieridae //The American Journal of Agriculture and Biomedical Engineering. – 2021. – Т. 3. – №. 06. – С. 135-143.

7.Jumaev R. Invitro rearing of parasitoids //E3S Web of Conferences. – EDP Sciences, 2023. – Т. 371.

8.Кимсанбаев Х. Х. и др. Биоценозда ўсимлик зараркунандалари паразит энтомофаглари ривожланиши.« //O'zbekiston» НМИУ,–Тошкент. – 2016.

9. Сулаймонов Б. А. и др. Ўрмон биоценозида фитофаг турлари ва улар миқдорини бошқариш //O'zbekiston» НМИУ, –Тошкент. – 2018.

10. Jumaev R., Rakhimova A. Analysis of scientific research on reproduction of species of Trichograms in Biolaboratory //The American Journal of Agriculture and Biomedical Engineering. – 2020. – Т. 2. – №. 08. – С. 148-152.

11. Axmatovich J. R. In vitro rearing of trichogramma (Hymenoptera: Trichogrammatidae) //European science review. – 2016. – №. 9-10. – С. 11-13.

12. Jumaev R. A. et al. The technology of rearing Braconidae in vitro in biolaboratory //European Science Review. – 2017. – №. 3-4. – С. 3-5.

13. Жумаев Р. А. Массовое размножение трихограммы на яйцах хлопковой совки в условиях биологической лаборатории и ее применение в агробиоценозах //Халқаро илмий-амалий конференция “Ўзбекистон мева-сабзавот маҳсулотларининг устунлиги” мақолалар тўплами. Тошкент. – 2016. – С. 193-196.

14. Жумаев Р. А. Значение представителей семейства BRACONIDAE в регулировании численности совков в агробиоценозах //ЎЗМУ Хабарлари. – 2017. – Т. 3. – №. 1.

15. Жумаев Р. А. РАЗМНОЖЕНИЯ ИН ВИТРО BACON HABETOR SAY И BRACON GREENI ASHMEAD //Актуальные проблемы современной науки. – 2017. – №. 3. – С. 215-218.

16. Axmatovich J. R. In Vitro Rearing of Parasitoids (Hymenoptera: Trichogrammatidae and Braconidae) //Texas Journal of Agriculture and Biological Sciences. – 2022. – Т. 4. – С. 33-37.

17. Suleymanov B. A., Jumaev R. A., Abduvosiqova L. A. Lepidoptera Found In Cabbage Agrobiocenosis The Dominant Types Of Representatives Of The Category Are Bioecology //The American Journal of Agriculture and Biomedical Engineering. – 2021. – Т. 3. – №. 06. – С. 125-134.