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Short communication

The most common contaminants in food supplements

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Introduction

In modern society, there is a continuous increase in the use of food supplements., which brings with it growing challenges regarding their health safety. Although these products are often perceived as beneficial and harmless, numerous studies highlight the potential risks associated with their uncontrolled and prolonged use. In order to protect public health, the European Union established the RASFF (Rapid Alert System for Food and Feed) – a system for the rapid exchange of information about risks arising from food and feed, including food supplements.

This system enables the efficient identification and withdrawal of products from the market that pose a direct or indirect threat to consumer health. The aim of this study was to conduct a qualitative and quantitative analysis of the most common contaminants reported in food supplements through the RASFF notification system during the period from January 7, 2020, to October 3, 2025.

Materials and methods

For the investigation of the most common contaminants in food supplements, the sources were data from the European Union, specifically through an online search of the Rapid Alert System for Food and Feed (RASFF) database within the period from 7 January 2020 to 3 October 2025. A detailed analysis and systematization of the data were performed using Microsoft Excel (including the use of pivot tables, advanced filtering, data sorting, and descriptive statistical analysis). The contaminants were categorized into the following groups: unauthorized novel foods, plants and plant ingredients, chemical contaminants, pharmacologically active substances, vitamins and minerals, non-nutritive ingredients, additives and processing aids, physical contaminants, and microbiological contaminants.

Results and discussion

A search of the RASFF database (section "RASFF Window") for the category "dietetic foods, food supplements and fortified foods", which enables viewing notifications and filtering them by criteria such as year and type of hazard, identified a total of 1912 notifications in the period from 7 January 2020 to 3 October 2025. Of the total number of notifications, 1726 referred to contaminants in food supplements.

The highest number of notifications was related to the presence of unauthorized novel foods, with 760 notifications representing 38.7% of the total. Within this category, cannabinoids (CBD, THC, and CBG) were the most frequently reported compounds, accounting for 36.4% of notifications referring to unauthorized novel foods.

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Other frequently reported substances included α-glycerophosphocholine (4.9%) and 5-hydroxytryptophan (3.7%). The second most frequent category included notifications related to impurities in food supplements, including the presence of unauthorized plants, plant ingredients, or permitted plant ingredients present in excessive quantities. This category accounted for 322 notifications (16.4%). The most frequently reported substances included yohimbine (23.3%), *Withania somnifera* (commonly known as ashwagandha or "Indian ginseng") with a share of 14.6%, and huperzine A reported in 8.4% of the notifications related to plant ingredients.

Chemical contamination of food supplements ranked third, with 314 RASFF notifications (16%). Contamination with pharmacologically active substances was reported in 245 notifications (12.5%). Excessive amounts of vitamins and minerals, as well as unauthorized dietary ingredients, were identified in 120 notifications (6.1%). Among vitamins, B-group vitamins (29.2%) and vitamin D (18.3%) were most frequently reported, while magnesium (11.7%) and zinc (10.8%) were the most common minerals.

The presence of excessive amounts of non-nutritive ingredients or their unauthorized forms accounted for 79 notifications (4%).

Additives and processing aids were reported in 57 notifications (2.9%), with the majority of these notifications (42.1%) referring to titanium dioxide.

Microbiological contamination was identified in 34 notifications (1.7%), most commonly involving bacteria from the genera *Salmonella* and *Bacillus cereus*.

Physical contaminants were reported in 33 notifications (1.7%). The analysis results indicate that unauthorized novel food represents the most frequently reported group in the notifications, reflecting the growing presence of innovative yet unregulated ingredients in supplements.

Conclusion

Based on the obtained results, this study highlights the importance of regular monitoring and efficient information exchange through systems such as RASFF. These systems play an important role in the quick identification and reporting of risks related to contaminants in dietetic products and food supplements, and they help improve food safety control.

In addition to regulatory measures and institutional supervision, it is also necessary to increase educational activities aimed at the general population. Raising public awareness about the possible health risks related to the self-initiated, uncontrolled, and improper use of dietary supplements is essential for promoting their safe and responsible consumption. Better consumer education, together with effective regulatory control, can help reduce the risks associated with contaminated or improperly used dietary supplements.

References

European Commission, n.d.a. Rapid Alert System for Food and Feed (RASFF). European Commission. https://food.ec.europa.eu/food-safety/rasff_en

European Commission, n.d.b. RASFF legal basis. European Commission. https://food.ec.europa.eu/safety/rasff/history-rasff/rasff-legal-basis_en

European Commission, n.d.c. RASFF Window: Online database of RASFF notifications. European Commission. https://webgate.ec.europa.eu/rasff-window