RAPID ALERT SYSTEM FOR FEED AND FOOD, A RELIABLE AND FAST TOOL IN REPORTING AND MANAGING SOURCES OF FOOD CONTAMINATION

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Abstract

The current work presents a review of notifications regarding food with different degrees of risk, registered in 2022 by the Central Competent Authorities for food and feed within the member states in the European Union. In the European Union, the health of food consumers is ensured through the implementation of strict legislation. This legislation covers both the production and circulation of food. One tool for checking food safety is the Rapid Alert System for Food and Feed, which links more than 160 European countries with regard to the transmission of information on food contamination. The European Community implemented the RASFF system with the following objectives: □ preventing entry into the market or ensuring the withdrawal from the market or from the final consumer of food that poses a risk to public health; □ prevention of feed that can indirectly affect public health from entering animal consumption; □ preventing the entry into the market of any material or product that comes or may come into contact with food and feed and may present a risk to public health; □ rapid information between the competent authorities in the field of food safety, at the three levels: central, county and local, on the dangers or risks regarding food and feed that do not meet the requirements imposed by the legislation on food safety, as they can constitute a risk factor in the food chain for consumers. The paper tracked the number of notifications of this portal regarding different food categories. Thus, in 2022, 3885 notifications were registered in the food field, and 230 related to materials that come into contact with food. Cases of contaminated food products from the European Union that posed a risk to consumers and were detained, recalled, confiscated or rejected from consumption were identified.

Key words: *health, diseases, control, European agreement*

INTRODUCTION

Among the factors that influence human nutrition, the economic one has an important place, food representing a commodity with high economic value The cost of food includes its importance to human health [6]. Food sanitation directly influences food safety. Unfortunately, sometimes contaminated food reaches the market [4]. Contamination of food can be achieved by biological, chemical, allergenic, and physical agents. As all types of food products can be at risk of contamination through these routes, special attention must be paid in the food industry sector to deliver safe products to consumers. All foods can be exposed to possible contamination, which is why food manufacturers must ensure that the products they prepare are safe for consumption. The risk of consuming contaminated food is added to other risk factors, such as the level of development of society, of education, influencing the health of the population with effects that can evolve from discomfort to death In order to limit the market penetration of foods that represent a risk for consumers, in the EU countries there is a

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complex legislative system regarding food hygiene and their safety [11]. In addition, the RASFF portal, the Rapid Alert System for Food and Feed, operates in EU member countries, which keeps them interconnected regarding food alerts. RASFF is a tool through which EU member countries receive information on public health risks, identified and the measures to be applied: retention, withdrawal, confiscation or rejection of the products in question. RASFF facilitates the rapid assessment of the situation in European states and the implementation of measures in a coherent and simultaneous manner, aimed at ensuring consumer safety. Being a member of the EU, Romania benefits from the advantages of the existence of these systems [9]. The purpose of the work is to highlight the effectiveness of the field transmission of the notifications registered in the RASFF in 2022 in correlation with the determination.

MATERIAL AND METHOD

To carry out the work, various articles, studies, regulations were studied and information provided by:• European RASFF portal [10];• The national RASFF portal [9];• The European RASFF activity report for the year 2022 [10].

RASFF is a tool for exchanging information between central competent authorities for food and feed within the EU Member States. Risk situations for public health in the member states are of interest and measures are taken that involve the retention, withdrawal, confiscation or rejection of the products in question. This way of quickly exchanging information allows EU Member States to immediately identify problems arising on their territory and take appropriate measures.

Thus, coherent and simultaneous actions are applied that ensure the safety of consumers [9].

RESULTS

In 2022, 4338 notifications were sent through the Rapid Alert System for Food and Feed - RASFF. Of these, 3,885 were from the food sector, 237 were related to feed, and 230 were related to materials that come into contact with food (Figure 1). A notification in the field of dietary supplements was also registered.

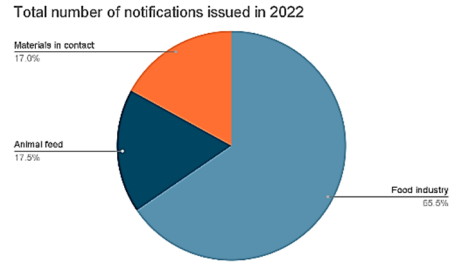

Fig. 1 - Notifications issued in 2022

Of the 3,885 notifications related to the food sector, 28.15% were alerts, 36.19% were rejections at the border, 23.47% were information and 12.17% referred to follow-ups. In the year 2022, a relatively constant number of monthly notifications was observed (7-8% of the total, each month), except for March, when the most numerous notifications were recorded (10.22% of the total) (Figure 2).

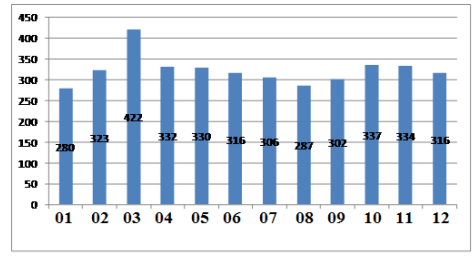

Fig. 2 - Breakdown of notifications by month

In 2022, in 30 European countries there were food hazards for the health of consumers, for which notifications were issued: 534 in the Netherlands, 519 in

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Germany, 358 in Belgium, 2 notifications in Iceland. In Romania, in 2022, 75 notifications were registered. The notifications of the RASFF system are classified according to the degree of risk, as follows: Increased risk; Medium risk; Low risk; Potential risk; No risk. Most notifications fell into the category of increased risk, and represented 61.75% of the total (Figure 3).

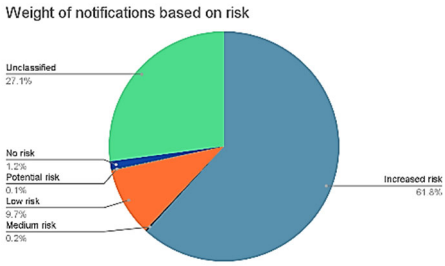

Fig. 3-Notifications based on risk

Among the notifications related to contaminated food, the most were related to the contamination of vegetables and fruits 26.88%, poultry meat and derived products 16%, followed by aromatic herbs and spices 11.32%. The fewest notifications, 0.47% each, were for crustaceans, eggs and fats. A pathogenic agent with risk for seafood is Vibrio parahaemoliticus [7]. Advanced molecular techniques can be used to identify it [5]. The main source of contamination identified was biological, with 811 notifications issued for the presence of pathogenic microorganisms and 481 notifications for mycotoxins. Among the microorganisms from fruits and vegetables that pose risks to human health, we highlight *the hepatitis A virus, Salmonella spp., Escherichia coli, Shigella spp, Giardia spp* [1]. Most diseases caused by consumption of fruits and vegetables are due to bacteria [1]. Among the notifications for the identified pathogenic microorganisms, 70% were issued for *Salmonella spp*., 13.44% for *Listeria spp*., and 5.42% for *Escherichia coli*.97% of the total notifications issued for mycotoxins were for Aflatoxins – 403 notifications and Ochratoxins – 65 notifications (Figure 4).

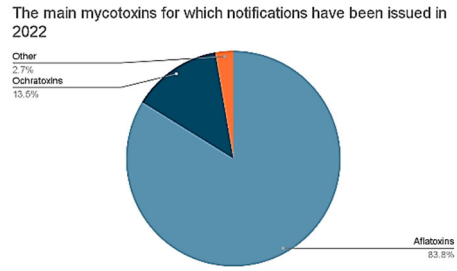

Fig. 4 -The main mycotoxins for which notifications

125 notifications were issued for the presence of heavy metals and 11 notifications for the presence of foreign bodies. Of these, 44.8% reported the presence of cadmium, 37.6% the presence of mercury and 13.6% of lead (Figure 5).

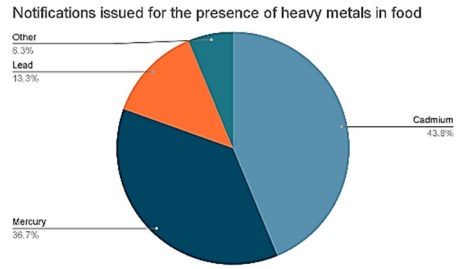

Fig. 5-Notifications for the presence of heavy metals in food

In Romania, in 2022, 8 notifications were issued regarding the contamination of food with heavy metals (Table 1) [8].

The accumulation of heavy metals such as lead, arsenic, mercury, cadmium and nickel leads to the destruction of the main metabolic process of the human body [2]. Few metals, such as aluminum, can be removed by elimination activities, while some metals accumulate in the body and food chain, showing a chronic nature [3].

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Table 1 Notifications regarding heavy metal contamination of food in Romania in 2022

1.	Exceeding the LMA Carbendazim in chopped dill 8g origin Egypt	01-08-2022 15:24:11
2.	Foreign body (polyethylene) in sausage	18-05-2022 16:22:12
3.	Cadmium in horse carcasses from Romania	18-04-2022 18:06:25
4.	Salmonella enterica ser. Enteritidis detected in chilled boneless skinless chicken breast from Poland	29-09-2022 16:36:52
5.	Salmonella spp. in minced meat in Romania	10-08-2022 11:38:47
6.	Exceeding the LMA Carbendazim in chopped dill 8g origin Egypt	01-08-2022 15:24:11
7.	Foreign body (polyethylene) in sausage	18-05-2022 16:22:12
8.	Cadmium in horse carcasses from Romania	18-04-2022 18:06:25

It is therefore important that food contaminated with heavy metals does not reach consumers. National as well as international cooperation is vital to develop appropriate tactics to prevent heavy metal toxicity [3]. The best strategy to obtain a safe product is to prevent contamination at various points in the production, processing and distribution chain.

This also includes the implementation of some sanitary treatments and maintaining the product in certain conditions (mainly temperature) that do not favor the development of microorganisms, which in the case of ecological products only involves the use of natural compounds.

CONCLUSIONS

The SRAAS system enables the identification and monitoring of foods that pose a risk to consumers.

National and international cooperation is vital to develop appropriate tactics to prevent food contamination.

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