

BORDER CONTROL ASSESSMENT OF FOOD FROM NONANIMAL ORIGIN

Dusica Santa^{1*}, Sonja Srbinovska²

¹Faculty of Technology and Technical Sciences, St. Kliment Ohridski University, Petre Prlichkov
42, 1400 Veles, Republic of Macedonia

²Faculty of Agricultural Sciences and Food - Skopje, St. Cyril and Methodius University, Edvard
Kardelj bb, 1000, Skopje, Republic of Macedonia

*e-mail:dusicasanta@gmail.com

Abstract

Official inspections and certification systems are fundamentally important and widely used. The confidence of consumers in the quality and safety of their food supply depends in part on their perception of the effectiveness of food control measures. A substantial part of the worldwide trade in food depends upon the use of inspection and certification systems. It is desirable that the design and application of these systems reflect appropriate principles.

The aim of this study was to provide a preliminary assessment of the imported food control system in Macedonia and assess its effectiveness by exploring the trends in food safety hazards through analyses of the border control of food safety of non-animal origin, in the period of 2005/06 and 2009/10.

According the results, the most often prohibited import products were flour, salt, juices and mushrooms. Foodstuffs imported from Serbia, China and Kosovo were identified as food with potentially high risk.

The paper, also, compares Macedonian with European food import control system and certain weaknesses in the food control procedures were identified. The paper gives recommendations for strengthening border control of food of non-animal origin with special concerns of the requirements for an imported food inspection programme based on risk that should be developed using a risk analysis approach.

Key words: Food safety, import, control.

1. Introduction

Effective national food control systems are essential to protect the health and safety of domestic consumers. They are also critical in enabling countries to assure the safety and quality of their foods entering international trade and to ensure that imported foods conform to national requirements (FAO/WHO [1]). Official and

officially recognized inspection and certification systems are fundamentally important and very widely used means of food control. But the occurrence of various national, European, and international food safety issues over the last few decades has arguably resulted in a decline in public trust in food safety regulation and management inside and outside Europe (Marvin *et al.* [2]). The confidence of consumers in the quality (including safety) of their food supply depends in part on their perception as to the effectiveness of food control measures (Codex Alimentarius Commission [3]). National food control systems are a key element in the protection of consumers from unsafe foods and from other fraudulent practices (Alomirah [4]).

Macedonia as candidate country for EU membership is moving forward EU and need to be in-line to fulfill the requirements in the field of food safety. From the last EC progress report for the Republic of Macedonia it is stated that there has been some progress in the area of food safety, veterinary and phytosanitary policy in particular with respect to legislative preparedness, but some issues still remain, especially in the improvement of the administrative capacity and in particular the effectiveness of monitoring and control systems (European Commission [5]).

This paper aims to provide a preliminary assessment of the imported food control system and to assess the effectiveness of this system in the Republic of Macedonia by exploring the trends in food safety hazards through analyses of the border control of food safety of non-animal origin. Furthermore the paper compares Macedonian control system with European food import control system and proposes recommendations for strengthening the border control of food of non-animal origin with special concerns regarding the requirements for an imported food inspection programme based on risk that should be developed using a risk analysis approach.

2. Materials and Methods

In depth desk research was performed by using high quality journals from online research databases. The newest developments in the area of food safety control and the systems for food control in the European countries were researched and analyzed.

To provide an overview of the European food control system the information from the official web sites on food related issues from the European commission, as well the web site of Eurlex that provides access to the legal acts were used. Furthermore the Rapid Alert System for Food and Feed (RASSF) reports were used also. Regarding the recommendations in this paper we used the Guidelines published by the European Commission and Codex Alimentarius that are for the planning and realization of the imported food control systems and the principles for risk based food control.

For the analysis of the control of the imported food from non-animal origin in Republic of Macedonia the reports of the performed official control by the state food inspectors from the Food directorate were used. Data from the period of 01.01.2005-01.01.2007 and 01.01.2009 – 01.01.2011 was collected and analyzed on origin of samples and type of products that have been most frequently found to be non-compliant.

3. Results and Discussion

Overview of the results of official border control of safety of imported food of non-animal origin

The results of the laboratory analyzed samples for the type of products that have been most frequently found to be non-compliant have been summarised in four figures. Products that were most rejected for import in 2005 are: juices (23.5%), salt (17.5%), mineral water (17.5%) and coffe (9%). Products which in 2006 were identified as most frequently non-complained are dates (13.5%) and mushrooms (13.5%), energy drink (9.5%), sesame (4.05%), coffe (4.05%), nuts (4.05%) and wheat (4.05%). Products that appear in both years are coffe and mushrooms.

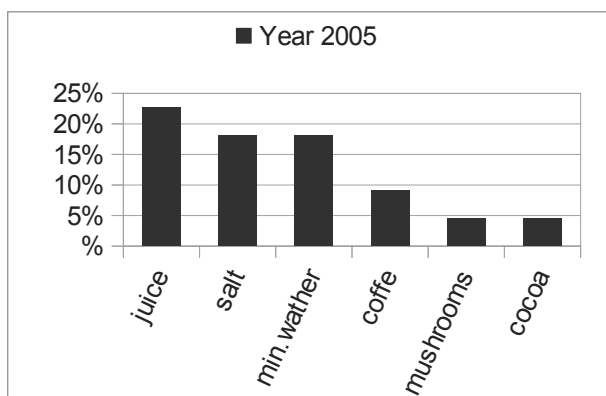


Figure 1. Food products that have been most frequently found to be non-compliant in 2005

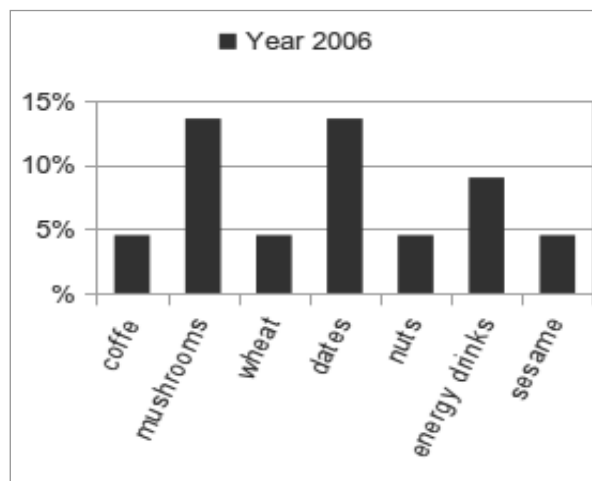


Figure 2. Food products that have been most frequently found to be non-compliant in 2006

In 2009 the largest number of samples (47.82%) that were banned for import in Macedonia belong to flour. Also 21.7% of the noncompliant samples are dietetic products, juices (13.04%), and 8.91% are pasta and aditives. In 2010, 64.7% of the products that are found as noncompliant are flour, 17.6% ajvar and 5.88% are weat, salt and ketchup.

Based on the data we can conclude that the products that are most frequently identified as noncompliant for import in Macedonia are flour, salt, juices and mushrooms.

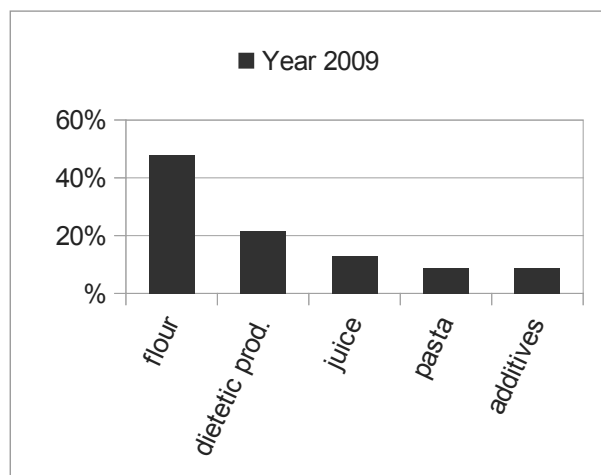


Figure 3. Food products that have been most frequently found to be non-compliant in 2009

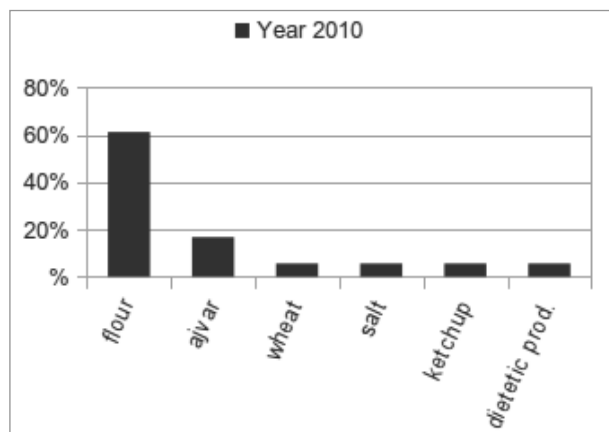


Figure 4. Food products that have been most frequently found to be non-compliant in 2010

In 2005 and 2006 more than 90% of the samples were non compliant because of chemical contamination. In 2009, 61% of the samples that were non-compliant belong to microbiological contamination: *Escherichia coli*, *Staphylococcus aureus*, *Proteus* and presence of moulds and yeasts. The main reason for non-compliance of the analyzed samples in 2010, (94.5%) are for the inappropriate quality of the products (composition of foodstuffs).

Table 1 presents the analysis of the countries with a high rate of non-compliant products at import in the period of 2005, 2006, 2009 and 2010. From the analysis it can be concluded that the samples with the highest rate of noncompliance originated from Serbia, in 2010 it reached 61.10% from the total samples. China has a increasing presence in 2009 and 2010. Also there is an increase of samples that are non-compliant coming from Kosovo and Bulgaria.

Table 1. Country of origin of non-compliant samples

Year	Country of origin						
	Serbia	Greece	China	England	Bulgaria	Slovenia	Austria
2005	50%	13.60%	9%	4.50%	4.50%	4.50%	4.50%
	Serbia	Turkey	China	Austria	Iran	Belgium	Albania
2006	27.30%	13.60%	9%	9%	9%	4.50%	4.50%
2009	Serbia	China	Kosovo	Bulgaria	Croatia	Greece	Germany
	37.50%	16.60%	12.50%	8.30%	8.30%	8.30%	8.30%
2010	Serbia	China	Kosovo	Bulgaria	Greece	Spain	-
	61.10%	16.60%	5.55%	5.55%	5.55%	5.55%	-

Structure of the imported food safety control system

Beside the issues with food safety and banning import of non compliant food, the free movement of safe and wholesome food is an essential aspect of the internal market and contributes significantly to the health and well-being of citizens, and to their social and economic interests. Because of this a substantial part of the worldwide trade in food depends upon the use of inspection and certification systems. Consequently

it is desirable that the design and application of these systems should be build on the regulatory framework, institutional structure and risk based control procedures.

a) Regulatory framework

The effectiveness of the control on food products depends on the quality and the fulfilment of the regulations in the area of food safety. The legal frame should enable the competent bodies to perform efficient controls during all the phases of the food chain.

At European level the general food law, the Regulation (178/2002) provides the basis for the assurance of a high level of protection of human health and consumers' interest in relation to food. This Regulation lays down the general principles governing food and feed in general and it establishes the European Food Safety Authority (EFSA).

In 2009 the Commission Regulation (EC) No 669/2009 was adopted as regards the increased level of official controls on imports of certain feed and food of non-animal origin. The addendum of this Regulation (212/2010) was also adopted. This Regulation provides a quicker and more comprehensive way to step up controls on food of non-animal origin or feed if an emerging risk is detected. According this regulation, the products are required to enter through designated entry points and they are subjected to documentary and physical checks, including laboratory analysis, at a frequency related to the risk identified. RASFF notifications are an important source of information to establish the list. Other sources include reports of the Food and Veterinary Office, reports and information received from third countries, information exchange between Commission and Member states and EFSA and scientific assessments where appropriate (European Commission [6]).

Also, in Europe for some particular products Commission Decisions have been adopted requiring specific controls prior to import. For example, from the RASFF report for 2009, there were about twice as many border rejection notifications on food of non-animal origin than of animal origin. The most important type of food of non-animal origin notified concerns "nuts, nut products and seeds".

In Republic of Macedonia the process of harmonization of the national legislation with the EU legislation is started. Till now significant changes in this area are made, but it is needed this process to continue. The new Law on Food Safety (OG 157/10) was adopted and this law is harmonized with the EU regulation 178/2002 as well as the hygiene package legislation from 2004.

It is recommended a list of products that require an increased level of official controls at import to be

adopted by Food and Veterinary Agency in Macedonia in order to allow known or emerging risks in feed and food of non-animal origin to be countered more effectively.

b) Institutional framework and risk analyses

The new Law on Food Safety (OG 157/10) also created changes in the institutional framework regarding the food safety policy. The Food and Veterinary Agency was created as body which merged the two previous institutions Food Directorate and Veterinary Directorate and it is responsible for food safety and veterinary policy in Macedonia.

The institutional framework is not structurally and institutionally identical across different EU countries - for example, institutional responsibilities for risk management, communication and assessment are not structurally, or indeed functionally, separated in many EU institutions (Houghton *et al.* [7]). One important thing to accent is that in EU the food policy is based on the application of **risk analyses**. Information gathering and analysis are essential elements of food safety policy, and are particularly important for the identification of potential feed and food hazards (Commission of the European Communities [8]). The Codex Alimentarius Commission defines risk analysis as a process composed of three components: risk assessment, risk management and risk communication. Risk analysis must be the foundation on which food control policy and consumer protection measures are based (FAO/WHO [9]). Nevertheless on European level the European Food Safety Authority should scientifically assess and communicate the risks associated with the food chain, helping to ensure that Europe's food is safe. The European Commission, European Parliament and EU Member States are the key risk managers in the EU system. Risk analysis forms the framework for the interactive activities between risk managers, risk assessors, operators and other interested parties. Generally, risk assessment may be considered as a science-based part of risk analysis making risks understandable, whereas risk management is developing and carrying out actions to reduce the risk when necessary (Tumoninnen [10]).

Macedonia should take a pragmatic approach and develop a cadre of scientists to interpret data and assessments from EU that come through various communication systems, and to use this information for the development of national food control programmes (FAO/WHO [11]). In this direction, in Macedonia the competent institution should make efforts more scientific data, expertise and opinions to be used in the development of the control programme for imported food. The concept of risk analyses should be more considered and applied.

c) Risk based border control

In Republic of Macedonia the inspection of food of nonanimal origin is not based on previously prepared plan for taking samples. There are not structured procedures for taking samples for different type of food. This research identified this stage as the most sensitive and area that needs improvements.

The inspection in Macedonia needs to move towards a **risk-based system**. The implementation of an imported food inspection programme based on risk provides a more effective means for addressing the food safety risks that are associated with imported food, ensuring compliance of imported foods with importing countries' food safety requirements and allows greater attention to be given to foods that present a higher level of risk to human health (Codex Alimentarius Commission [12]).

When physical checks are to be undertaken, sampling plans for imported products should take into account the level of risk. Where an imported product is found not to be in conformity, the resulting measures should take into account the following criteria to ensure that any action is proportionate to the degree of public health risk, potential fraud or deception of consumers: repeated non-conformity in the same product or in the same category of products; history of non-conformity of those responsible for handling the products; reliability of checks made by the country of origin (Codex Alimentarius Commission [13]).

In this direction, Heinzler *et al.* [14] from 2007 to 2009 performed research on the border control system for food originating from third countries at the Frankfurt Airport, the Hesse Ministry of Energy, Environment, Agriculture and Consumer Protection. They used a concept "bottleneck control" system with risk based sampling. They conclude that mandatory prior notification is essential for all non-animal food products imported into the EU. Only a unified Europe-wide approach can eventually lead to success. Food and Veterinary Office of the EU made an inspection to Hesse, Germany and in the closing report was indicated that the concept of "bottleneck control" is a step in the right direction (Heinzler *et al.* [14]).

The results from the data analyzed in this paper regarding the history of non conformity of products as well as the list of potential countries of origin with the high rate of non-compliant products can be used for further development of the risk based sampling programs. In this the way Macedonian authorities will have a greater control on the imported food and secure the safety of its citizens.

4. Conclusions

- From the current research it can be concluded that there is a need for strengthening the system for control of imported food in Macedonia. In this paper for the period of 2005-2006 and 2009-2010 are identified the types of products which have the history of non-compliance and countries of origin with high rate of non compliant products. This data can be used for the preparation of future risk based sampling plans at import.
- On the other hand the list of products within the Commission Regulation which are subject of an increased level of official controls on imports should be accepted and published by Macedonian authorities. This will enable synchronization of the list and continuous update of the product list.
- As it is impossible to sample every product, to test for all parameters, it is appropriate to target at those situations where greatest risk of product and/or non-compliance exists. In order to undertake effective risk assessment, it is necessary to understand the nature and severity of the hazards possible and the likelihood of those hazards being realized. This demands a sound scientific understanding of the problem, and a formalized system for collating and rationalizing data on non-compliance.
- Therefore, a system based on an integrated risk assessment approach is needed. Risk assessment will need to take account of known scientific data, historic data on imports and countries, FVO reports in order to determine where the public health risks lie.
- This paper recommends increase in the use of risk analyses approach in sampling imported food for quality control.

5. References

- [1] Joint FAO/WHO publication (2003). *Assuring food safety and quality: Guidelines for Strengthening National food control systems*.
- [2] Marvin H.J.P. et al. (2009). *A working procedure for identifying emerging food safety issues at an early stage: Implications for European and international risk management practices*. Food control, (20), pp. 345-356.
- [3] Codex Alimentarius Commission (1995). *Principles for Food import and Export inspection and certification*. CAC/GL 20-1995.
- [4] Alomirah F.H. et al. (2010) *Assessment of the food control system in the State of Kuwait*. Food control, (21), pp. 496-504.
- [5] European Commission (2010). *Republic of Macedonia progress report*.
- [6] European Commission (2009). *Regulation (EC) No 669/2009 of 24 July 2009 implementing Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards the increased level of official controls on imports of certain feed and food of non-animal origin and amending Decision 2006/504/EC*. Official Journal of the European Union, L 194/11.
- [7] Houghton J.R et al.(2008). *The quality of food risk management in Europe: Perspectives and priorities*. Food Policy, (33), pp. 13-26.
- [8] Commission of the European Communities (1999). *White paper on Food Safety*. COM 179.
- [9] Joint FAO/WHO publication (2003). *Assuring food safety and quality: Guidelines for Strengthening National food control systems*.
- [10] Tumoninnen P. (2009). *Developing risk-based food safety management*. Academic disertation, University of Helsinki and Evira.
- [11] Joint FAO/WHO publication (2003). *Assuring food safety and quality: Guidelines for Strengthening National food control systems*.
- [12] Codex Alimentarius Commission (2003). *Principles and guidelines for imported food inspection based on risk*. CAC/GL 47-2003.
- [13] Codex Alimentarius Commission (1997). *Guidelines for the design, operation, assmennt and accreditation of food import and export inspection and certification systems*. CAC/GL 26-1997.
- [14] Heinzler M. et al. (2011) *New border control system originating from third countries*. Environmental Sciences Europe (23:14).