
DO WE NEED AN INTEGRATIVE APPROACH TO FOOD SAFETY AT THE COUNTRY LEVEL?

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ABSTRACT

Scientific data show increasing evidence of relationship between food safety and food standards on one hand and public health concern on the other hand. In FR Yugoslavia in 1989 the system of reporting on food safety issues on federal and republic level was established. The system provides data on laboratory analysis of 22 food items (bread, milk, meat and meat products, vegetables, processed vegetables etc). Those items were and still are tested on food quality and safety parameters such as microbiological, chemical and radio nuclides. Seldom all required testing on chemical and radio nuclides are performed, so we lack exact risk assessment for those contaminants. Further, during war conflict in FR Yugoslavia and also due to industrial hazards in neighbouring countries (Rumania, Hungary) high quantities of PCBs, dioxins, heavy metals, arsenic compounds and other toxic compounds contaminated the environment. In the soil and in some food products (animal fats predominantly) radio-nuclids originating from Chernobyl hazard can still be detected. In order to identify the level of exposure to chemical and radio nuclide contaminants in the food chain it is essential to test intensively and systematically food from animal and from plant origin. In order to prevent entering the contaminants to the food chain new recommendations from WHO, FAO and EU suggest implementation of integrative approach to food safety and control over the whole chain of food production from "farm to table". This approach provides control of the contaminants in soil, water, air, control over primary food production (covering animal feed too), intensive control over processing with implementation of HACCP system, but also, over transportation, retail trade, street food and home made food too. In our country creation of the map of the polluted areas, and actions in order to treat the pollution should accompany implementation of this new food safety system. The need for assessment of the level of exposure to different contaminants present in food and measuring the health risk for our population is imminent. This new system of integrative control should provide safer food for our population, and adequate products for export and thus help sustainable development of our agricultural regions.

Key words: public health, food, food safety, food standards

INTRODUCTION

The availability of enough food of good quality is an essential human right. In order to obtain good quality of food certain rules in food manufacturing must be obeyed, but at the same time food safety standards application ensure achievement of good quality and preservation of quality. Scientific data show increasing evidence of relationship between food safety and food standards on one hand and public health concern on the other. Modern standpoint indicates introduction and control of food standards, food safety, control over food poisoning, new technologies and processes. Implementation of these standards must be guided by specific needs of national food policy regarding nutritional problems present in the society.

World food trade implies harmonisation of food standards among different countries and regions and implementation of standardised laboratory testing on food safety issues. Also, it demands good data monitoring on food contaminants and food-borne diseases and collection of data within each country and reporting to international bodies dealing with food and health (FAO, WHO).

In order to promote public health and reduce number of food related diseases in Europe a comprehensive approach to food and nutrition was suggested by WHO (The Impact of Food and Nutrition on Public Health)¹ and EU Commission (White Paper on Food Safety, issued in January 2000)².

In order to create Food Safety Strategy at the national level all relevant government departments and agencies should be included. Collaboration in this field among various sectors: health, agriculture, environment, trade, tourism, finance, education and planning must be obtained. (Figure 1.)

Harmonization of the national laws and regulations with international regulations and standards is necessary in order to provide safe trade and transport of food. This may enhance export of food from the countries in the South-East Europe to EU and other markets, as well as, facilitate import of foods from EU market.

SOURCES OF FOOD CONTAMINATION

Food can be contaminated by chemical compounds (toxic metals, pesticide residues, mycotoxins, antibiotics, hormones, polychlorinated biphenyls PCBs, polychlorinated dibenzo-p-dioxins PCDDs and other), various microbiological contaminants (salmonella, E. Coli, campylobacter and other) and radionuclides.

Food contamination may be result of unintentional environmental contamination; it, also, can result from agricultural practices, production, processing, storage, packaging, transport or from fraudulent practices. Some compounds may be found in food as a result of intentional use. This concerns residues of pesticides in food of plant and animal origin and veterinary medicines (antibiotics, hormones) in food of animal origin.^{3,4,5}

Further, during war conflict in FR Yugoslavia and also due to industrial hazards in neighbouring countries (Rumania, Hungary) high quantities of PCBs, dioxins, heavy metals, arsenic compounds and other toxic compounds contaminated the environment. In the soil and in some food products (animal fats predominantly) radio-nuclides originating from Chernobyl hazard can still be detected.

Food borne diseases may endanger health affecting various target organs. In children food poisoning may provoke life threatening diarrheas, weight stunting, growth retardation,

disturbances in development of cognitive functions or severe neural disorders. Also, other organs and systems may be affected. In adults as a result of long-term ingestion of certain contaminants various bone, kidney, neural, haematological and other diseases are registered.

Food chain can be contaminated at each step of food production (primary production, primary food processing, secondary food processing) and distribution (transport, catering, import, export, retail trade). Food can be further contaminated during domestic food preparation or in street food facilities.

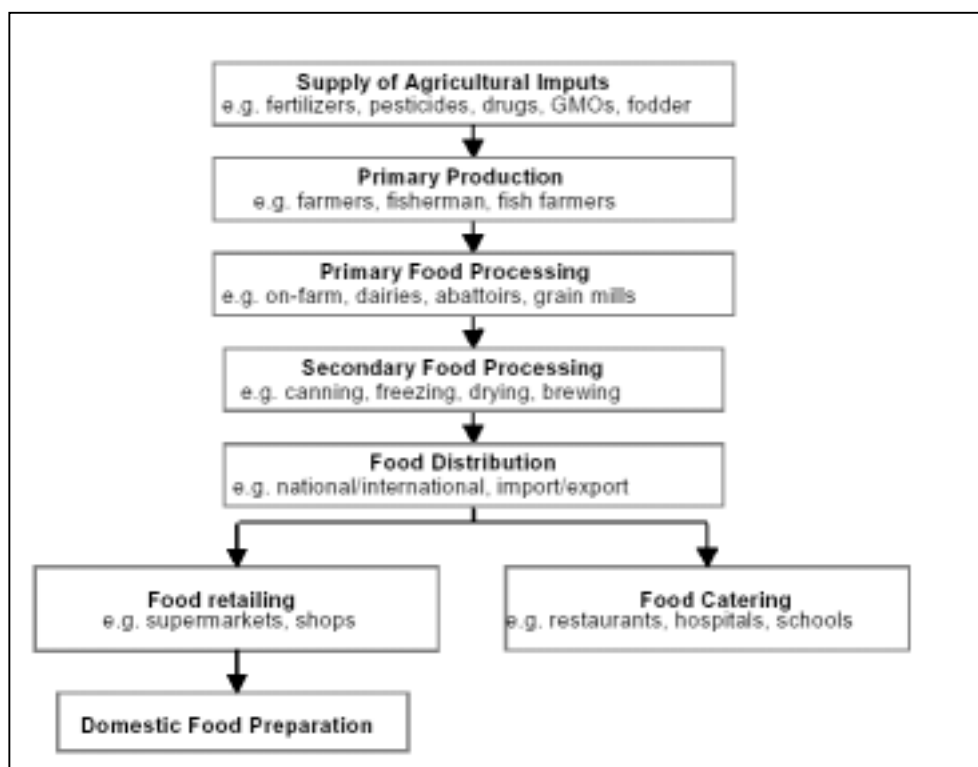


Figure 1.

BACTERIAL CONTAMINATION

The incidence of food-borne *Campylobacter*, *Salmonella*, *Listeria*, *E Coli 0157* is high in different European countries. Our published data reveal the same problem, but they do not cover the whole territory and different inspections (veterinary, food technology and sanitary – medical) do not give their data to each other so we cannot reveal the exact magnitude of the problem.

A non-governmental organisation – Belgrade Consumer `s Union working for almost 20 years follows the food safety and controls the situation in retail trade (government and private sector) and publishes the results in media. Impact of those information is improvement of the food quality and safety in industry and private sector analysed.

Analysing results obtained by Belgrade Consumer's Union in comparative testing of food in retail trade during the 5 year period 1996–2000 the incidence of bacterial contamination of food was from 33.4% of all tested samples in 1996 to 24.3 in 2000. Usually total number of microbes was raised, but, also, E.coli and Salmonella were found in samples. Those samples with pathogenic bacteria were produced by small manufacturers of meat and dairy products. During the summer months bacterial contamination raised due to bad hygienic practice.

Testing of animal feed by an independent laboratory – Eco lab, Belgrade, shows high microbial contamination in up to 25% of tested samples.

CHEMICAL CONTAMINATION

Additives, pesticides, dioxins and veterinary medicines must be monitored due to their possible toxicological impact on public health. Those data may help our public health sector in education of farmers as well as control over industry processes and technologies.

In food samples tested by Consumer's Union chemical contamination of samples was often found (28% in 1996, 22% in 2000). In juices made of fruit concentrate ammonia, chlorine and nitrates are found in concentrations higher than allowed by our law. Mostly, those juices were made by small private manufacturers, and majority of them do not have proper licence for production. In honey, high microbiological contamination was found, but sometimes high values of lead were found too.

In animal feed every 10th sample was contaminated with heavy metals such as arsenic and lead according to testig made by Ecolab laboratory.

Traits of antibiotics are usually found in products manufactured by small producers in private sector.

Testing food on radio nuclides is not obligatory by our law, and only samples coming from countries under risk for such contamination are tested. But experiences from developed countries (Germany, Sweden) indicate that even pollution remaining from Chernobyl accident can be identified in animal and plant fats. During war conflict in FR Yugoslavia and also due to industrial hazards in neighbouring countries (Rumania, Hungary) high quantities of PCBs, dioxins, heavy metals, arsenic compounds and other toxic compounds contaminated the environment. fats predominantly) radio-nuclides originating from Chernobyl hazard can still be detected. In order to identify the level of exposure to chemical and radio nuclide contaminants in the food chain it is essential to test intensively and systematically food from animal and from plant origin.

NEW TECHNOLOGIES

Wide range of new products, processes and systems of distribution are now present They influence changes in food habits and food availability. Evidence of relationship between nutrition and health are numerous, but also, bad diet is one of the main preventable risk factors for the chronic diseases like coronary heart disease, cancer, obesity, diabetes, osteoporosis and other.

In FRY mortality from CVD rises from 23.1% in 1962. to 55.3% in nineties. In the same period mortality from different forms of cancers rises from 8.4% to 15.8% and for diabetes from 0.5% to 2.2%.³ Prevalence of cancers correlates well with areas of Serbia such as Vojvodina and South-East Serbia where certain food habits are present (meat processing,

deep frying, processing of food on hot and cold smoke etc.(Those techniques are tightly related with production of nitric compounds and polyphenoles. Also these regions were contaminated with different compounds during bombing and in other accidents. Thus, we expect raise in cancer morbidity, especially of digestive cancers in people living in these regions.

CONCLUSION

In order to prevent entering the contaminants to the food chain new recommendations from WHO, FAO and EU suggest implementation of integrative approach to food safety and control over the whole chain of food production from “farm to table”. This approach provides control of the contaminants in soil, water, air, control over primary food production (covering animal feed too), intensive control over processing with implementation of HACCP system, but also, over transportation, retail trade, street food and home made food too. In our country creation of the map of the polluted areas, and actions in order to treat the pollution should accompany implementation of this new food safety system. The need for assessment of the level of exposure to different contaminants present in food and measuring the health risk for our population is imminent.

In order to implement good food safety system a network of governmental and non-governmental facilities in Yugoslavia should be provided. The network consists of administration (national, local) inspectorate services (national, local) and analytical facilities. Collaboration of health, agricultural and veterinary inspection on national and local levels shall provide comprehensive control over food safety. Training of inspectors in internationally recognized methodology of inspection as well as implementation of internationally recognized standards in laboratory equipment, methodology and staff education in FR Yugoslavia should provide uniform control over food safety and results comparable with other countries in Europe.

Education in food safety should be included in curriculum of governmental officials, national and local decision makers, media, consumers.

Food safety should be incorporated in educational plans for primary, secondary schools and academia and as a part of the continuing education for all professionals dealing with food production and distribution.

The new system of integrative control should provide safer food for our population, and adequate products for export and thus help sustainable development of our agricultural regions.

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