METHODS OF ANALYSIS OF AFLATOXINS IN FOOD

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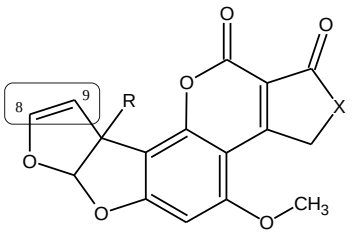
Introduction. One of the factors to increase the population life expectancy is the improvement of the food quality. This demands a continuous improvement of the system of food monitoring for the content of harmful substances like aflatoxins and other toxic substances. Aflatoxins can occur in food, such as groundnuts, tree nuts, maize, rice, figs and other dried food, spices, crude vegetable oils and cocoa beans, as a result of fungal contamination before and after harvesting. Besides, aflatoxins can be found in milk and eggs if the animals consume the infected forage.

Aim. We have tried to study and generalize information on modern requirements for the aflatoxins content in various products accepted in the EU, the USA and Ukraine. Besides, it was necessary to systematize the methods of express-detection and aflatoxins quantitative analysis.

Material and methods. We have used the variety of the information available over the internet and the data of the specialized text-books and periodicals within the framework of our work. The methods of the analysis the most valuable information selection and scientific induction method were applied for this study.

Results and discussion. Aflatoxins are a number of derivatives of the furo[2,3-*h*]-coumarine which are produced by *Aspergillus flavus*. Aflatoxins cause sharp and chronic toxicoses for a human. At a chronic aflatoxicosis (the use with food in a regular dose of 500 μg/kg of body weight) the development of primary cancer of liver is possible for a human. Aflatoxin M1 is a major metabolite of aflatoxin B1 for humans and animals, which may be contained in milk derived from animals fed with aflatoxin B1 contaminated food. In the EU the extreme content of aflatoxin B1 is set at the level of 2-5 μg/kg for grain and nuts. UV detection in long-wave region either TLC are used as screening methods for grains and nuts. Concentration of suspected samples is performed through extraction or special sorbents use. The methods of quantitative determination of aflatoxins can foresee immunoassay or radioimmunoassay, and chromatography such as HPLC. Immunologic methods are based on obtaining antisera to mycotoxins conjugate with bovine serum albumin and have the most sensitivity.



X = CH_2 **B1** R = H; **B2** R = H, 8H,9H;
M1 R = OH; **M2** R = OH, 8H,9H;
X = OCH_2 **G1** R = H; **G2** R = H, 8H,9H

Conclusions. Bringing legal environment in line with the EU directives and the introduction of the modern methods of detection and quantification of aflatoxins for food products is an actual task for Ukraine with respect to the ambition to place leading positions at the world's agro-industrial competition.