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FACULTY OF VETERINARY MEDICINE - SKOPJE



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P49 AFLATOXINS OCCURRENCE IN FEEDING STUFFS FOR POULTRY

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Introduction: Aflatoxins are highly toxic and carcinogenic metabolites of certain strains of the fungi *Aspergillus flavus*, *A. nomius*, *A. pseudotamarii* and *A. Parasiticus*. They cause immune-system suppression, growth retardation, liver disease and death in both humans and animals. Aflatoxicosis in poultry primarily affects the liver, but can involve immunologic, digestive and hematopoietic functions. Aflatoxin can adversely affect weight gain, feed intake, feed conversion efficiency, processing yield, egg production, fertility and hatchability. In compliance with EU Regulations Commission (2003/100/EC) and Official Gazette of the Republic of Macedonia (49/2012), complete and complementary feedingstuffs for poultry should comprise maximum concentration of 20 µg/kg of aflatoxin B1 (10 µg/kg of aflatoxins in feedingstuffs for chicken).

Material and Methods: Quantitative research of aflatoxins (B1, B2, G1, G2) in feedingstuffs for poultry was obtained using HPLC method with fluorescence detection, after their clean-up on immunoaffinity columns. This method is in accordance with ISO 16050:2003 for aflatoxins. This study comprises 47 samples of feedingstuffs for poultry (23 feedingstuffs for laying hens, 12 feedingstuffs for parent stocks, 3 feedingstuffs for chicken, 2 feedingstuffs for broilers and 7 non-specified feedingstuffs), which were analyzed in a period of 12 consecutive months. Limit of detection (LOD) of aflatoxins was 0.005 µg/kg.

Results: Aflatoxins were found in a concentration range between 0.272 µg/kg and 40.242 µg/kg in 39 samples of feedingstuffs for poultry. From 0.445 µg/kg to 30.191 µg/kg in 9 feedingstuffs for parent stocks; from 0.335 µg/kg to 40.242 µg/kg in 22 feedingstuffs for laying hens; from 2.969 µg/kg to 17.714 µg/kg in 2 feedingstuffs for chicken and from 0.272 µg/kg to 39.204 µg/kg in 6 non-specified feedingstuffs. None of the feedingstuffs for broilers contained detectable concentration of aflatoxins. Aflatoxins concentration was below LOD in 8 samples, while 10 of the samples exceeded maximum limit of aflatoxins concentration (7 feedingstuffs for laying hens (i.e. 30% of total number of laying hens feedingstuffs), 1 feedingstuff for parent stocks, 1 feedingstuff for chicken and 1 non – specified feedingstuff).

Conclusion: Aflatoxins concentration exceeding maximum limit was found in relatively high percentage of feedingstuffs for laying hens. Taking into consideration the insufficient number of feedingstuffs, especially for chicken and broilers and the lack of data regarding the aflatoxin distribution in eggs and meat and the prevalence of aflatoxicosis, any firm conclusion cannot be made. This gives encouragement for further investigation in this direction and eventually introduction of new limits on the maximum amount of aflatoxins based on different poultry categories.

Key words: aflatoxins, feedingstuffs, poultry, HPLC-FD, immunoaffinity columns