

CONTAMINATION WITH DEOXYNIVALENOL IN THE MILLING - BAKERY INDUSTRY UNDER THE INFLUENCE OF CLIMATIC CONDITIONS FROM ROMANIA

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Abstract

Climatic changes expected for Romania (increase of temperature with 3 - 5 °C and decrease of rainfalls during summer) require assessments of mycotoxins incidence and trends in the agri-food chain. The purpose of research was to determine deoxynivalenol in the milling and bakery industry, under the influence of the agro-climatic factors in period 2014-2015.

From the Vel Pitar Group some product categories (47 samples: common wheat, wheat and rye flour, wheat and rye bread, toast, cake) were sampled and analyzed for deoxynivalenol by the enzyme-linked immunosorbent assay. In Romania, the maximum levels for deoxynivalenol in foodstuffs are according to Commission Regulation (EC) No. 1881/2006. Meteorological (rainfall, temperatures) and geographical data for the place of cultivation, storage and processing of grain and food were taken into consideration.

Deoxynivalenol ranged from <18.5...963.86 µg/kg (mean 528.04 ± 83 µg/kg), incidence of positive samples was 17% (8/47s), no sample was registered above the maximum limits (0%). Although in May and June, abundant rainfall were recorded in Transylvania and Southern Hilly Area, deoxynivalenol was not detected above the maximum limit in any sample of the raw grains, intermediate cereal products and cereal foods. Conditions of extreme, strong or moderate drought were recorded in Moldavia, Southern Plain and Dobrogea, and Oltenia Plain regions, resulting a very low incidence or no positive samples. A tendency of deoxynivalenol contamination was observed for Transylvania (Brasov county) and Southern Hilly Area (Gorj and Valcea counties), confirming the data for temperate and humid regions of Romania according to the climate change scenarios.

To maintain the safety of food products, Vel Pitar Group is partner in research projects regarding risk assessment of mycotoxins in agri-food chain under the influence of climate change predictions for Romania.

Key words: Deoxynivalenol, Agrifood chain, Climate change, HACCP system, Vel Pitar Grup, Romania.