

# EFSS 15

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## Fate of Fusarium mycotoxins during the production process of bakery products

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### ABSTRACT

Producing safe food is a goal and an obligation for each producer. Mycotoxins by representing the most significant contaminants of grain are considered to be the main risk in the production of safe bakery products. Conditions during the production process defined by temperature regime, duration of the temperature regime, moisture content, pH value, as well as the type and level of mycotoxin concentration in the matrix are the most important factors influencing the reduction of mycotoxin content. The aim of this study was to examine the influence of production process of different types of bread, rusk, bread crumbs and biscuits on the content of deoxynivalenol, zearalenone and total fumonisins in bakery products. Samples of naturally contaminated whole grain wheat flour (DON 700 µg/kg), wheat flour type T-1100 (DON 500 µg/kg) and whole kernel corn flour (DON 2420 µg/kg, ZON 292 µg/kg and Total FUMO 554 µg/kg) were used to examine the influence of the production process on the content of Fusarium mycotoxins in bakery products. Experimental production of different types of bread, rusk, bread crumbs and biscuits was conducted in a bakery pilot plant. Ridascreen® ELISA-assay was used to analyze the content of deoxynivalenol, zearalenone and total fumonisins. Based on the results it was concluded that the process of production of bread, rusk, bread crumbs and biscuits significantly reduces the content of deoxynivalenol, zearalenone and total fumonisins in final products ( $p < 0,05$ ). However, in some cases (rusk and bread crumbs) results raised a question if the % of reduction is high enough to make the final product compliant to European legislation (Reg. 1881/2006). Although European Food Safety Authority and the European Commission had frequently expressed opinions on Fusarium toxins, setting limits, regulations and guidelines in order to reduce their levels in raw materials and food commodities: maximum limits for mycotoxins set by European legislation (Reg. 1881/2006) apply to content in 'product as is' regardless the huge difference in moisture content in various products grouped in same category.