# EFFECT OF XYLANOLYTIC ENZYMES ON THE EFFICIENCY OF BIOETANOL PRODUCTION FROM *FUSARIUM* CONTAMINATED GRAINS

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**Summary.** The study is dedicated to investigate the influence of *Fusarium* contaminated wheat on the efficiency of a fermentation process and to show the actual problem of mycotoxin detoxification through fermentation. During the experiment the influence of new biotechnological means: xylanolytic enzymes in combination with tradicional amylolytic enzymes on the efficiency of an alcoholic fermentation of *Fusarium* contaminated wheat and deoxynivalenol (DON) detoxification in the DDGS (Dried Distillers Grains with Solubles), usually used for feed, was analysed. The acoustic method developed in the Department of Food Technology, Kaunas University of Technology was used for the determination of DON in *Fusarium* contaminated grains. Wheat with high concentration of DON (3950 μg/kg) was used for bioethanol production.

The results showed that *Fusarium* contaminated wheat has a negative influence on alcoholic fermentation and on the bioetanol production processes: the quantity of alcohol was on 13.5 % lower then in the case of wholesome grain fermentation and 73 % of DON came into DDGS. The aplication of a new combination of amylolytic and xylanolytic enzymes for cereal saccharafication allowed to increase the concentration of alcohol in the broth by 35.3 % and in the same way increased the efficiency of the fermentation process of *Fusarium* contaminated wheat. By using this enzyme combination, the highest degree (51.5 %) of partial detoxification of DON was achieved during the fermentation process. Therefore, cereal material must be properly investigated before bioethanol production to avoid that higher amounts of mycotoxins come in the residue and onwards in feed. The experiment proved that the acoustic method can be used for the rapid quantitative determination of DON in grain.

**Keywords:** deoxynivalenol (DON), wheat, xylanolytic enzymes, bioethanol, Dried Distillers Grains with Solubles (DDGS), acoustic method.