

University of Belgrade
Technical Faculty in Bor



**6th INTERNATIONAL
STUDENT CONFERENCE
ON TECHNICAL SCIENCES**

BOOK OF ABSTRACTS



Students from the Technical Faculty in Bor paid a visit to the open pit coal mine Drmno and the cooper open pit Veliki Krivelj, Serbia



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Saša Stojadinović
Ljubiša Balanović**

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ADSORPTION OF ZEARALENONE BY ORGANOKAOLINS

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Abstract

Mycotoxins are secondary metabolites produced by fungal species [1]. Zearalenone (ZEN) is estrogenic mycotoxin, produced by *Fusarium* species, commonly found on different cereal crops [2]. This mycotoxin causes reproductive disorders in animals. Addition of adsorbents is the most economical approach to decontaminate animal feed contaminated with mycotoxins. Commonly used mineral adsorbents for this purpose are zeolites and bentonite. In their natural forms, they can bind only aflatoxins [3]. For adsorption of other mycotoxins, chemical modification is needed.

In this study, the kaolin from a plant for production of quartz sand in Rgotina is investigated as potential adsorbent for ZEN. Preliminary experiments confirmed that the natural kaolin has no affinity to adsorb this toxin. Thus, organokaolins were prepared by treatment of the natural mineral with three different levels of octadecyldimethylbenzyl ammonium (ODMBA) ions equivalent to 25, 50 and 90% of kaolin cation exchange capacity (CEC). Adsorption of ZEN on organokaolins was followed at pH 3 under *in vitro* conditions by using high performance liquid chromatography (HPLC). The effects of amounts of surfactant used to prepare organokaolins and adsorbent mass (5.0 - 0.5 mg/mL) on adsorption of ZEN was investigated with the initial concentration of ZEN at 2 mg/L. Results indicated that ZEN adsorption increased with increasing amounts of surfactant on the kaolin and with increasing the amount adsorbent in suspension. Based on the obtained results, adsorption of ZEN is related to the increasing number and availability of adsorption sites at organokaolinic surface.

Keywords: kaolin, surfactants, mycotoxins, adsorption

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