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**BOOK OF
ABSTRACTS**

*XIII International Scientific Agriculture Symposium
"AGROSYM 2022"
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DETERMINATION OF COUMAPHOS RESIDUES IN HONEY AFTER VARROA TREATMENT USING FLUORESCENCE SPECTROSCOPY

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Abstract

Varroa infestation is considered a major threat to honeybees due to its strong impact on the colony, attacking larval cells, increasing bee mortality, and serving as a vector of pathogens. Coumaphos is an organophosphate-based acaricide insecticide which is frequently used to control Varroa (*Varroa destructor*) mites in the honey bee (*Apis mellifera*) colonies. The accumulation of these lipophilic contaminants in honey and beeswax may affect honey bee health, mainly honey bee larvae which are the most sensitive, and negatively affect queen quality. In this study, we analyzed honey samples from hives of honey bees that were treated with Coumaphos, as well as the samples of pure Coumafos. The front-face fluorescence measurements of analyzed honey samples were recorded using an F13-221 P spectrofluorimeter, with a 450 W Xenon lamp. Obtained results showed an emission peak with maximum around 400 nm, after excitation at 340 nm. It could be related to the presence of Coumaphos in honey samples, which showed the characteristic position of emission maximum at the same wavelength. These results showed that fluorescence spectroscopy may be useful as a fast and sensitive method, for the efficient and specific determination of toxic substances such as Coumaphos residues in honey. Due to the proven toxic effects on honey bees, as well as on humans, monitoring hazardous contaminants in honey is of crucial importance in the field of food and agriculture.

Keywords: *Coumaphos, honey bee, honey, fluorescence spectroscopy.*