# Mendeleev 2021

XII International Conference on Chemistry for Young Scientists

# BOOK OF ABSTRACTS

St Petersburg University

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Abstracts presented in the original edition

# MICROEXTRACTION OF ZEARALENONE FROM FOOD SAMPLES USING DEEP EUTECTIC SOLVENTS

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Zearalenone is one of the most common mycotoxins produced by Fusarium fungi. It has a nonsteroidal estrogenic effect on living organisms and primarily affects crops growing in a humid climate as well as cereal products. In addition, this mycotoxin does not degrade during storage or heating. Thus, it is important to control zearalenone content in food of plant origin. Such matrices are complex and contain many interfering components, so the analyte should be extracted and preconcentrated for further analysis.

Deep eutectic solvents (DESs) have been proven to be an environmentally safe alternative to toxic organic extractants. They consist of hydrogen bond acceptor and hydrogen bond donor and are liquid at room temperature. Composition of DES can be easily varied which allows tuning its properties for selective and efficient extraction of the target compound. In this study, hydrophobic DESs based on menthol and long-chain alcohols were studied for the separation of zearalenone from cereal products for the first time.

The suggested sample preparation approach includes two steps (Figure 1). The first one is aimed to extract the analyte into the solution of DES precursors in a polar solvent. In this case interactions with menthol and long-chain alcohol, such as hydrogen bonding, can speed up the process and improve its efficiency. The second step includes injection of the obtained supernatant into deionized water for dispersive liquid-liquid microextraction. The *in situ* formation of the DES phase microdroplets is observed throughout the entire volume of the sample leading to zearalenone preconcentration. The determination of the analyte is carried out by HPLC with fluorescence detection.

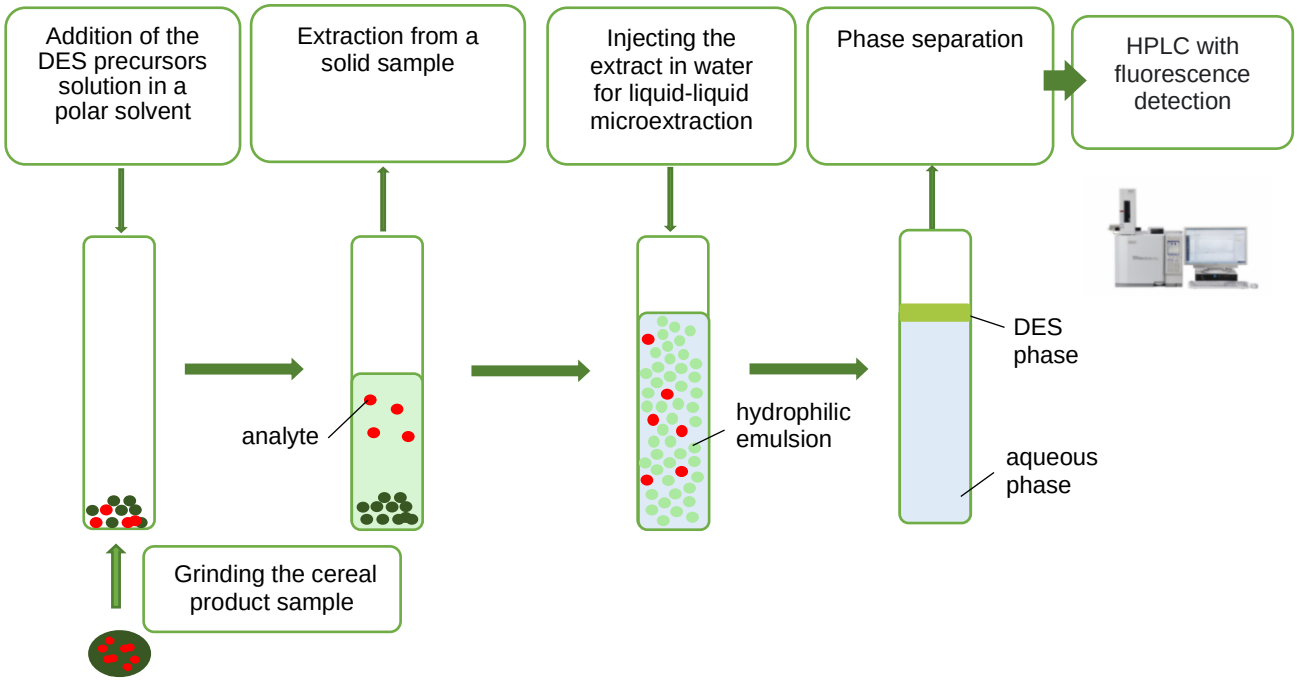


**Figure 1.** Schematic representation of sample preparation steps.

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