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## A proteomic approach to identify zeins upon eco-friendly ultrasound-based extraction

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In this study we present an enhanced eco-friendly extraction method, including grinding and sieving corn seeds, for prolamin proteins using an ultrasonic extraction methodology. Zein is a type of prolamin storage protein that has a variety of biomedical and industrial applications. Due to the considerable genetic variability and polyploidy of the starting material, as well as the extraction methods used, characterization of the protein composition of zein, requires a combination of different analytical processes. Therefore, we combined modern analytical methods such as mass spectrometry (MS), Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE), atomic force microscopy (AFM) or infrared spectroscopy (FTIR-ATR) for a better characterization of the extracted zein. In our studies, the use of ultrasonic homogenizer, 65% ethanol extraction buffer and 710  $\mu\text{m}$  maize granulation yielded the highest protein extraction. MS and SDS-PAGE analysis revealed as main component the  $\alpha$ -zein proteins in the maize flour extract. Moreover, fundamental studies based on AFM and FTIR-ATR approaches were applied to investigate the effect of different ethanol solutions on the self-assembled structures of zein protein. This research leads to a better understanding of zeins content, critical for developing new applications of zein in food and pharmaceutical industries, such as biocompatible medical vehicles based on polyplexes complex nanoparticles of zein with antimicrobial or drug delivery properties.

### Biography

Laura Darie Ion has completed her PhD in 2015 at Chemistry Department, Alexandru Ioan Cuza University of Iasi, Romania and currently, she is postdoctoral researcher at the same University. During the PhD and postdoctoral studies, she has completed several research internships at University of Konstanz, Germany and published more than 13 papers in reputed international journals.

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