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Proteomic-based approach for the characterization of maize protein

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Prolamins are the major storage proteins in cereal grain such as maize where more than 60% of the total endosperm protein belong to zein. Based on their molecular weight and solubility, zeins are classified into four different zein classes (α, β, γ, δ). However, the major components express in literature are α and β-zeins. Beaing a natural compound, zeins has the advantage of being used in diferent fileds, such as: industrial, food and pharmaceutical. Morover, recent studies showed that zein had a good controlled-release characteristic in drug delivery systems such as films, micro-encapsulation, gels as well as release of biocompatible anticancer and anti-coagulant drugs. The most defining characteristic of zein consist in their insolubility in water and the high solubility in alcoholic solutions, such as 65% ethanol to 95% ethanol. Due to the vast genetic polymorphism of the starting material and to the extraction conditions, analysis of their compositions requires a combination of the latest and modern analytical methods such as SDS-PAGE, 2D gel electrophoresis and mass spectrometry.

Therefore, we report here a new process consisting in successive grinding and sieving of corn seeds to obtain different maize flours, with different chemical compositions and protein contents based on particle hardness. The zein extraction was aslo investigated using 65-95% aqueous ethanol under ultrasound conditions. Besides, the extracted zein and the commercial zein protein were used for different conjugates synthesis. We have applied proteomic based approaches such as MALDI ToF mass spectrometry, SDS-PAGE electrophoresis and FT-IR spectroscopy to characterize the extracted zein.

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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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Total antioxidant capacity (TAC) as a marker of severity of COVID-19 infection; possible prognostic and therapeutic clinical application

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The pathogenesis of SARS-CoV-2 infection, the causative pathogen of the known COVID-19 pandemic is not well clarified. In this regard oxidative stress is one of the topics that need to be investigated. Therefore, the present research was performed to explore the relationship between the oxidant/antioxidant system and COVID-19 exacerbation. Sera from 120 patients with COVID-19 infection were collected; besides sera from 60 healthy volunteers were collected as the control group. The patient group consisted of 60 cases with mild disease and 60 severely ill patients. Serum levels of total antioxidant capacity (TAC) and nitric oxide (NO) as well as serum activities of the two main anti-oxidant defense enzymes, superoxide dismutase (SOD) and catalase (CAT), were measured by commercial kits. TAC levels were considerably lower in patients compared with healthy individuals ($P<0.05$) and also between patients with mild and severe diseases ($P<0.05$). A rather decreasing trend was also found in NO concentration as well as SOD and CAT activity, though, the observed differences were not statistically significant ($P>0.05$). These findings suggest that COVID-19 patients may be susceptible to depleted total anti-oxidant capacity. Moreover, showing such variation in blood samples of infected individuals could be considered as a predictive marker of COVID-19 severity.

Biography:

Neda Yaghoubi has completed his MSC at the age of 38 years from Mashhad University of Medical Sciences and at the moment she is studying clinical biochemistry to get a PhD degree. She has published 3 papers in reputed journals and is doing several pieces of research on COVID-19 pathogenesis.

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