Abstract

Ultrasound-Assisted Extraction of Zein From Corn

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Abstract: Zein, a protein found in maize endosperm is a major co-product of the bio-fuel industry with different application in *(i)* biomedicine as drug-delivery compound, drug capsules that dissolve in the body; *(ii)* in industrial production of bioplastic, paper coating, and food products (chewing gum). Zein was classified according to the structure of the amino acid sequence, solubilization and molecular weight into 4 fractions, α, β, γ and δ-zeins. The α-zein is found in the largest amount and consists in two peptides with 19 kDa and 22 kDa and is the extraction is usually perform with ethanol. Due to the high complexity of the starting material and to the extraction conditions, analysis of protein compositions requires a combination of modern analytical methods such as SDS-PAGE, 2D gel electrophoresis and mass spectrometry. Here, we investigate, by using analytical methods, the efficiency of zein extraction from corn flours using 65-95% aqueous ethanol under ultrasound conditions from dry-ground whole corn as well as meals with different grain sizes. Moreover, the extracted zein and the commercial zein protein were used for different conjugates synthesis. We have applied modern methods such as MALDI ToF mass spectrometry, SDS-PAGE electrophoresis and FT-IR spectroscopy to characterize the extracted zein.