

Profiling Techno-functional and Structural Modifications of Pea Protein by Ultrasound

NGADI M. (1), KUCHA C. (1)

¹ McGill University, Montreal, Canada

Pea is a valuable source of natural protein, as well as other vital nutrients. Ultrasound processing is a non-thermal food processing method in which foods are treated with sound energies. The aim of this study is to investigate the thermal, techno-functional, and structural modifications that occur as a result of treating pea protein isolates (PPI) with ultrasound. Ultrasound treatments were applied at different combinations of time and power levels. Modifications due to thermal changes were analyzed by differential scanning calorimeter. Structural modifications were investigated by FTIR spectrometer and scanning electron microscope, and various laboratory methods were used to examine the techno-functional properties, such as protein solubility. ANOVA simultaneous component analysis (ASCA) established the relationship between the different ultrasound process parameters, while Principal component analysis (PCA) was used to investigate the interrelationships between the modifications impacted by the ultrasound technology. The result shows that, depending on the power level and time of application, ultrasound induced structural change in PPI that enhanced the properties of the products.