

Title Freezing of soybeans influences the hydrophobicity of soy protein
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Abstract

By using quartz-crystal microbalance (QCM) and cyclic voltammetric (CV) techniques, the effect of freezing on the hydrophobicity of soy protein was investigated. The results were compared to those of a sodium dodecyl sulfate (SDS) binding method. In the QCM studies the highest protein load onto the hydrophobic ethanethiol-monolayer was found with heated soy protein from frozen soybeans (HSFS), followed by heated soy protein from unfrozen soybeans (HSUS), unheated soy protein from frozen soybeans (USFS), and unheated soy protein from unfrozen soybeans (USUS). In the CV studies, it was found that values of an anodic profile decreased with adsorption time: it was the greatest with HSFS, followed by HSUS and USFS, and least with USUS. Results of SDS binding capacity were found to be in line with those results of a QCM and CV measurements, indicating freeze treatment increased the hydrophobicity of soy protein regardless of heating. In addition, QCM and CV measurements were found to be very convenient to determine the hydrophobicity of soy protein successfully.