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Czech J. Food Sci.

R. Kováčová, A. Synytsya, J. Štětina:

Characterisation of Whey Proteins – Pectin Interaction in Relation to Emulsifying Properties of Whey Proteins

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The aim of this work was to characterise influence of whey proteins – pectin interaction on emulsification properties of whey. As the first, structural characteristics of pectin-protein complexes were evaluated for pure β-lactoglobulin by both dynamic light scattering method for measuring of the particle size distributions and Doppler laser electrophoresis for measuring the ξ-potential (surface electrical potential) of particles. In mixed pectin-β--lactoglobulin systems, it was observed that the addition of pectin prevent from the protein-protein interaction, which caused production of huge protein aggregates (2000 – 2500 nm) at pH values near β--lactoglobulin isoelectric point and at temperatures near

its denaturation temperature. However, these protei – pectin complexes had large hydrodynamic diameters (monomodal size distribution at 350 and 1000 nm for high esterified and low esterified amidated pectin, resp.), which can slow down their diffusion to the oil-water interface in emulsions. The &xi -potential values indicated improvement of colloid stability by addition of pectin. The evaluation of the influence of the protein – pectin interaction on emulsification properties was performed by the determination of a surface weighted mean (D [3,2]) of oil droplets in o/w emulsions measured by the laser diffraction, further by microscope observations, the determination of emulsion free oil content and observations of creaming. The emulsifying properties were influenced by the pectin addition, more negatively by the high esterified than by the low esterified amidated pectin addition.

Keywords:
whey proteins; pectins; dynamic light scattering; &xi -potential; emulsion; particle size distribution; free oil

[fulltext]