

## Protein-free cress seed (*Lepidium sativum*) gum: Physicochemical characterization and rheological properties - DTU Orbit (09/11/2017)

### Protein-free cress seed (*Lepidium sativum*) gum: Physicochemical characterization and rheological properties

Protein-free cress seed gum (PFCSG) was obtained by precipitation of crude cress seed gum (CSG) with ethanol followed by treatment with protease. Molecular weight, moisture, ash and uronic acids content decreased after elimination of protein. Elimination of protein improved significantly rheological properties and thermal stability of cress seed gum. Mechanical spectra of the CSG and PFCSG were classified as weak gels and PFCSG showed stronger and more elastic network structure. The gum dispersions exhibited strong shear-thinning behavior which was described satisfactorily by the Herschel-Bulkley and Moore models. Protein-free cress seed gum had higher apparent and intrinsic viscosities than the crude gum. CSG indicated lower hysteresis loop area, but degree of structural recovery of the samples showed no significant difference. The main decomposition of PFCSG started above 213 °C with two peaks (at 261.72 °C and 306.58 °C) and initial decomposition temperature of CSG was 190.21 °C with one peak at 258.28 °C. DSC results coincided with those observed by thermogravimetric analysis. Enzyme treatment lowered the surface activity of CSG.

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