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Microstructure and Some Functional Properties of Spray Dried Cheddar Whey Concentrated by Ultrafiltration or Combination of Ultrafiltration and Vacuum Evaporation

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In order to study the influence of the vacuum evaporation (VE) process on the functionality of whey protein concentrates (WPC's) , Cheddar WPC's were produced with and without VE, viz. by i) ultrafiltration (UF) and spray drying (SD) (UFSD), and by ii) UF, VE and SD (UFVESD). Geling properties and interfacial microstructure around residual fat were studied by transmission electron microscopy. Both WPC's were hydrated with 0.1 M NaCl at pH 7.0 (10% protein w/v) and gels were made in glass tubes by heating for 15 min at 90°C. Electron dense membrane like structures were seen at the oil-water interface of gels prepared with UFVESD whey implying the presence of large amphipathic aggregates. Samples from UFSD which had not been subjected to VE, did not show such structures. Gels made from UFVESD had significantly higher strain values than UFSD gels. Functional attributes studied were packing density (PD) and water holding capacity (WHC). The packing density of the UFVESD powders was three times that of the UFSD powders indicating markedly larger powder particles. Data thus indicated changes in the interfacial microstructure and some functional attributes due to the incorporation of VE.

Keywords: dairy, dehydration, role, proteins

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