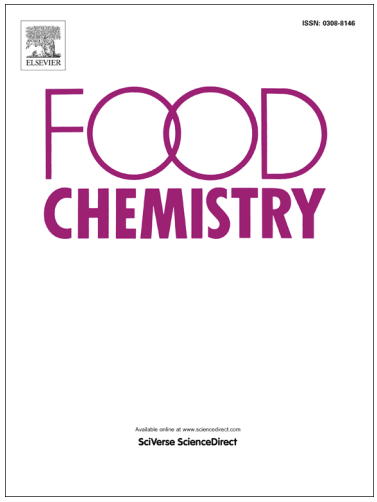

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Molecular forces and gelling properties of heat-set whole chicken egg protein gel as affected by NaCl or pH

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ABSTRACT

Effects of NaCl concentrations and pH on the intermolecular forces and gel properties of whole chicken egg protein dispersions were studied via solubility, surface hydrophobicity, intermolecular forces, texture analysis, low-field nuclear magnetic resonance (LF-NMR) and colour analysis. Results showed that the intermolecular forces involved in the formation of egg gel were regulated by NaCl/pH. The results of gel fracture analysis suggested that the changes of fracture strength and strain were closely related with the internal balance of gel molecular forces. Moreover, a negative/positive correlation existed in the free water/bound water relaxation proportion and fracture strength. These findings provide an important theoretical basis for the innovation of heat-induced egg gel products.

Keywords: whole egg proteins, surface hydrophobicity, intermolecular forces, texture properties, low-field nuclear magnetic resonance

Chemical compounds studied in this article: 8-anilino-1-naphthalenesulfonate (PubChem CID: 1549065); Hydrochloric acid (PubChem CID: 313); Sodium