

Rheological Properties of Sunflower Oil-in-Water Emulsion Containing Vinegar, Stabilized with Gelatinized Bambara Groundnut Flour

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Abstract. The influence of vinegar concentrations on the rheological properties of 40% (w/w) sunflower oil-in-water emulsions stabilized with 7% (w/w) gelatinized bambara groundnut flour (BGNF) was investigated. The rheological properties of interest were steady shear, time dependent and viscoelastic characteristics. Rheological characterizations of the emulsions were carried out using a shear rate controlled rheometer. Both emulsions with and without vinegar were pseudoplastic, thixotropic and viscoelastic fluids. Vinegar however, significantly ($p < 0.05$) affected rheological properties of BGNF-stabilized emulsion. Vinegar in the emulsion decreased extent of thixotropy, pseudoplasticity and viscoelasticity of BGNF-stabilized emulsions. The results indicated that the rheological properties of BGNF-stabilized emulsion can be controlled and manipulated using vinegar however, the presence of vinegar in BGNF-stabilized emulsion may be deleterious to the emulsion. The result provided the information to understand the influence of vinegar on the rheological properties of BGNF-stabilized emulsions for product and process development.