

Effects of ultrasonicated methylcellulose coating on French fries during deep frying

ABSTRACT

Ultrasonic treatment (UT) effects on methylcellulose (MC) for the food coating purpose prior to deep-fat frying process of potato strips were demonstrated. Different concentration of MC (0.5–2.0 wt/vol%) solutions were subjected to UT at 20 W to evaluate the effect of UT treated coatings on rheological behavior of the coated samples and their efficiency in minimizing the oil uptake. Application of UT to methylcellulose (UTMC) clearly showed a phase transition from fluid- to gel-like between 20 and 65°C with the increasing in the oscillatory frequency and temperature ramp test of UTMC showed the sol–gel transition occurrence is lower than non-UTMC at 20 and 29°C, respectively, within the linear viscoelastic region. When the MC concentrations were varied, the most effective concentration was noticed to occur at 1.0 (wt/vol%) UTMC whereby the relative variation of water retention and oil uptake were reduced to about 49.9 and 31.0%, respectively, as compared to 1.0 wt/vol% non-UTMC formulation. Experimental results affirm that UTMC coating application can be used successively to improve rheological properties of MC by minimizing oil uptake on fried food.