

Stability and rheology of concentrated of concentrated O/W emulsions based on soybean oil/palm kernel olein blends.

ABSTRACT

Droplet size distribution and rheological properties of egg yolk-stabilized emulsions were studied before and after storage (25 °C, 30 days). The dispersed phase (70%) of the emulsions was based on soybean oil (SBO) and 10–40% palm kernel olein (PKO) replacements of SBO. Replacement of PKO resulted in a significant increase in droplet mean diameters and a decrease in rheological properties of the emulsions. All emulsion exhibited a gel-like characteristic with storage modulus higher than loss modulus and $\tan \delta$ greater than 0.3. Significant increase ($p < 0.05$) was found for droplet mean diameters and rheological properties of the emulsions after storage. Emulsion with fully SBO and the highest PKO replacement (40%) were found to be the most unstable, which was ascribed to a strong flocculation. With 10–30% PKO replacements, the emulsions displayed a better stability after storage, most probably promoted by significant content of short-medium chain fatty acids in PKO.

Keyword: Soybean oil, Palm kernel olein, Droplet size, Flow behavior, Viscoelastic, Emulsion stability, Coalescence, Flocculation