

STABILIZATION OF OIL-IN-WATER EMULSIONS WITH MODIFIED RICE STARCH

Surangna Jain, Manop Suphantharika and Thunnalin Winuprasith
Mahidol University, Thailand

In this study, rice starch was modified by different mechanisms and used as a potential emulsifier for producing stable emulsions. Producing stable emulsions are of huge importance for the food industries and known to have many food applications. Modified rice starch was chosen as a potent emulsifier because modified starches are hydrophobic, and they tend to stabilize the emulsions through steric interactions and hence are less influenced by different environmental stresses such as pH, ionic strength and temperature. The emulsions (soybean oil/modified rice starch dispersions, 10/90, v/v) were prepared by homogenization and the influence of different starch concentrations (1-5% w/w) on their stability and properties were evaluated. It was observed that the mean droplet size of the emulsions decreased with the increasing starch concentrations due to enough adsorption of the starch particles at the oil-water interface of the droplets and this was further confirmed by the microscopic observations. Also, at higher starch concentrations (4-5% w/w), the emulsions were found stable to flocculation and coalescence and had higher stability to creaming. Further, addition of modified rice starch to the emulsions led to reduced rate of lipid oxidation during storage. The results obtained highlight the potential of the modified rice starch as an emulsifier and as a substitute to the protein stabilized emulsions which are sensitive to the different environmental stresses.

surangnajn8@gmail.com