

Effect of polysaccharide emulsifiers on the fabrication of monodisperse oil-in-water emulsions using the microchannel emulsification method

ABSTRACT

The microchannel emulsification method was used to prepare monodisperse soybean oil-in-water emulsions, with polysaccharides as the sole emulsifier. The effects of different types (sodium alginate, carboxymethyl cellulose, pectin, gum arabic) and concentrations (0.1, 0.5, 1.0%) of polysaccharide on the droplet size, droplet size distribution and stability of the emulsions were investigated. The droplet diameters of the resulting emulsions were in the range of 35 ± 2 to 47 ± 3 μm , with coefficient of variations (CV) of below 6.6%. Generally, the droplet size increased as the concentration of the polysaccharides increased. The stability of emulsions prepared using 0.5% of sodium alginate, carboxymethyl cellulose and gum arabic was also evaluated *in situ*. Sodium alginate- and gum arabic-stabilized emulsions were stable for at least 6 h.

Keyword: Droplet formation; Low-energy method; Natural emulsifier; Spontaneous; Stabilizer; Uniform droplet size