

Influence of pectin and CMC content on physicochemical properties of orange beverage emulsion.

ABSTRACT

The effect of type and concentration of two hydrocolloids namely pectin (1.5, 3 and 4.5% w/w) and carboxymethylcellulose (CMC) (0.1, 0.3 and 0.5% w/w) on the physicochemical properties of beverage emulsion was assessed. In most cases, the significant ($p < 0.05$) changes in physicochemical properties were more pronounced with the replacement of pectin rather than CMC. In contrast with significant ($p < 0.05$) effect of pectin on average droplet size, the substitution of xanthan gum with CMC did not show a significant ($p > 0.05$) effect on average droplet size. The replacement of 20% (w/w) Arabic gum with 1.5% (w/w) pectin led to the significant ($p < 0.05$) decrease in the polydispersity index (PDI), cloudiness, and emulsion stability as well as significant ($p < 0.05$) increase in droplet size and size index. Consequently, the increase of pectin content up to 4.5% (w/w) resulted in the significant increase in the magnitude of physicochemical properties studied except for electrophoretic mobility. The substitution of 0.3% (w/w) xanthan gum with 0.1% (w/w) CMC resulted in decrease in the degree of all physicochemical properties except for PDI. Subsequently, the increase in the magnitude of all physicochemical properties was observed as the CMC concentration was increased.

Keyword: Hydrocolloid; Pectin; Carboxymethylcellulose; Beverage emulsion; Xanthan gum; Arabic gum; Average droplet size; Electrophoretic mobility; Cloudiness; Emulsion stability.