

Influence of pectin and CMC on physical stability, turbidity loss rate, cloudiness and flavor release of orange beverage emulsion during storage

ABSTRACT

In the present work, the effect of type and concentration of two hydrocolloids namely pectin (1.5%, 3% and 4.5%) and CMC (0.1%, 0.3% and 0.5%) on physical stability, turbidity loss rate, cloudiness and flavor release of orange beverage emulsion was investigated during six months storage. From the turbidity loss rate results, the orange beverage emulsions containing 4.5% and 1.5% (w/w) pectin showed the highest and least storage stability, respectively. In contrast to the first two months storage, the replacement of both supplementary emulsion components resulted in a significant ($p < 0.05$) increase in turbidity loss rate of all orange beverage emulsions, thus indicating a decrease in capability of beverage emulsion to maintain the cloudiness during storage. The cloudiness of all samples significantly ($p < 0.05$) decreased during storage. The differences between the volatile release behaviors of target volatile compounds from orange beverage emulsions having different formulations indicated that the overall volatile flavor release was strongly influenced by the emulsion composition. This finding may be explained by the interactions between emulsion matrix and volatile flavor compounds. The release contents of most of target flavor compounds were significantly ($p < 0.05$) decreased during storage, especially for the aldehyde compounds studied (i.e. octanal, decanal, neral, geranial).

Keyword: Flavor release, Physical stability, Turbidity loss, Cloudiness, Beverage emulsion, Pectin, CMC, Supplementary emulsion components