Abstract

In recent years, natural food additives have gained an increased interest due to its importance towards healthy lifestyle. *Pandanus conoideus* Lamk. or red fruit oil is an endemic plant to Papua Islands that has high abundance of carotenoids, which may be considered to be a great source of natural colourant. Due to the lipophilicity nature of the oil, an encapsulation method has to be applied to improve its functionality and properties, that is, co-crystallization with the addition of emulsifiers and stabilizers. The post-dissolution stability of red fruit oil powder has not been assessed by previous literature. Thus, the objective of this study is to investigate the post dissolution creaming and total carotenoid content stability of co-crystallized red fruit oil powder added with sodium caseinate, gum arabic, and guar gum. Creaming stability was assessed by using the Creaming Index (CI) method, which observed the phase separation of emulsions at hour 0, 6, 12, 24, 36, 48, 60, and 72. Similarly, the Total Carotenoid Content (TCC) of samples were analyzed spectrophotometrically at day 0 and after 3 days of storage and compared. Our results have revealed the application of co-crystallization to improve the overall creaming behavior and TCC retention rate when compared to the pure oil extract. The most superior creaming stability was exhibited by NaCas and Gum Arabic + NaCas emulsion samples with 0% CI value until 48 and 72 hours, respectively. Meanwhile, our TCC results have showed a significant carotenoid retention of formulation containing only sodium caseinate (64.17±0.58), and can be further improved when used in conjunction with gum arabic (67.23±0.60) or guar gum (86.44±0.50). This study has shown co-crystallized red fruit oil with the aid of emulsifiers and stabilizers to be a potential source of natural food colourant with comparable post-dissolution stability.

Keywords: *red fruit oil, post-dissolution stability, co-crystallization, creaming index, total carotenoid content*