

## ABSTRACT

Red fruit oil (*Pandanus conoideus Lam.*) is a carotenoid rich oil originating from Papua and a potential source of natural food colorant. Due to its volatile form, a preservation method through encapsulation by spray drying was applied in this study. Maltodextrin and whey protein isolate were used as carrier agents, five formulations were made at different concentrations (formula A (MD only), B (MD:WPI 3:1), C (MD:WPI 1:1), D (MD:WPI 1:3), and E (WPI only)). An emulsion was prepared according to the formulations and was processed through the spray dryer, then analyzed for its total carotenoid content, color, and stability. Results could only be best considered as recoverable carotenoid content due to issue in extraction. Results indicate that recoverable yield was found to be acceptable (56.73-65.43%), with higher yield in samples using higher concentrations of maltodextrin. Effect of processing was observed, it was determined that there was no significant impact on samples with formula C and E. When comparing between formulas, formula C was found to be higher than formula A. Stability of carotenoids over 4 weeks of storage was only observed in powder with formula E. Significant correlation between recoverable carotenoid content and L\*a\*b\* color values at week 4 were not able to be detected in this study. Conclusively, it can be assumed that encapsulation of RFO through spray drying was successful, proving both the process and the active ingredient as a potential option to produce natural food colorants.

**Keywords:** *Red Fruit Oil, natural food colorant, spray drying, maltodextrin, whey protein isolate, total carotenoid content*