

Microencapsulation of Anthocyanin from *Clitoria ternatea* Flower and Analysing its Stability

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The study focuses on anthocyanin pigments from Blue Pea Flower (*Clitoria ternatea*) encapsulated in maltodextrin (MD) as a natural food colorant. Various BPF to MD encapsulation ratios, alongside 40% MD concentration and non-encapsulated anthocyanin, were tested under different storage conditions (temperatures: -20°C, 25°C, 45°C; light: dark & light) for 12 days. Non-encapsulated anthocyanin degraded more in higher temperatures and light, highlighting the need for encapsulation for improved stability. The 5:1 BPF to MD ratio had the highest water activity (0.81 ± 0.00), potentially impacting moisture content. Meanwhile, the 1:2 BPF to MD ratio showed the highest encapsulation efficiency ($0.99 \pm 0.00\%$), and the 1:1 ratio had the highest solubility ($99.21 \pm 1.49\%$), suggesting easy incorporation into foods. However, the 5:1 BPF to MD ratio exhibited high degradation in anthocyanin color stability, stressing the importance of the encapsulation ratio for color preservation. Different MD concentrations affected encapsulation efficiency and solubility, with extremes leading to reduced stability in high temperature and light conditions. The study concluded that the 1:1 BPF to MD ratio, along with 40% MD concentration, resulted in a favorable encapsulation structure with a fibrillar, 'collapse building' shapely structure. This indicates potential for the 1:1 ratio in producing a stable colorant. Researchers and industry professionals can optimize encapsulation based on these ratios for enhanced stability. Overall, the study lays a foundation for producing natural food colorants with improved stability, presenting a safer alternative to synthetic colorants in the food industry.

Keywords: *Blue pea flower; Encapsulation; Clitoria ternatea; Maltodextrin*

Acknowledgement: Research and Publication Committee, Rajarata University of Sri Lanka (Grant no: RJT/R&PC/2022/R/FOT/01)