

Takunrat Taksima 2015: Use of Encapsulation Technology to Enhance Stability of Natural Astaxanthin for Application in yogurt. Master of Science (Fishery Products), Major Field: Fishery Products, Department of Fishery Products. Thesis Advisor: Assistant Professor Wanwimol Klaypradit, Ph.D. 119 pages.

This study was aimed to increase stability of natural astaxanthin using encapsulation technology by coacervation technique incorporated with ultrasonic atomizer. To encapsulate astaxanthin, various concentrations of alginate (0.8, 1.0 and 1.2% w/v) and chitosan (0.5, 0.7 and 1.0% w/v) were prepared for use as wall materials. Astaxanthin beads derived from various treatments were not significant difference ($p < 0.05$) in terms of size and weight. However, alginate (1.2% w/v) mixed with chitosan (1.0% w/v) exhibited the highest percentage of yield as well as encapsulation efficiency values, at $85.73 \pm 0.25\%$ and $91.34 \pm 0.00\%$ values, respectively. Astaxanthin from encapsulated beads were assessed by thin layer chromatography (TLC), demonstrating orange bands at R_f of 0.34 and R_f of 0.50, representing free astaxanthin and monoester astaxanthin, respectively. In addition, antioxidant properties of encapsulated astaxanthin made from alginate (1.2% w/v) mixed with chitosan (1.0% w/v) showed the highest scavenging effects and chelating ability as determined by DPPH free radical scavenging and ferrous ion chelating methods, respectively. Consumer test ($n=130$) of yogurt containing astaxanthin beads was conducted for degree of liking with respect to appearance, color, aroma, taste, texture and overall acceptance. Results indicated that most of consumer positively accepted yogurt with astaxanthin beads (86.21%), giving the scores for each attribute of 6.91, 7.35, 7.12, 5.70, 5.81 and 6.22 respectively on the 9-point hedonic scale. Further data analysis by Logistic Regression, color, aroma and overall liking were significant factors affecting overall acceptance and purchase intent of consumers. After consumers had been informed of astaxanthin benefits, purchase intent was increased up to 95.57%. The results suggest the potential use of encapsulation to protect astaxanthin functional properties for food application.

Student's signature

Thesis Advisor's signature