

Title Kinetics of astaxanthin degradation and color changes of dried shrimp during storage
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Abstract

Dried shrimp is a high value fishery product of Thailand. Since it is known that drying and storage conditions affect the color changes of dried shrimp, but the quantitative information on this aspect is still very limited, the objective of the present study was to investigate the long-term effects of drying air temperature (80, 100, 120 °C) and various storage parameters, namely, storage atmosphere (air, vacuum) and storage temperature (4, 15, 25 °C), on the kinetics of astaxanthin degradation and of color changes, in terms of CIELAB parameters L^* , a^* and b^* , of dried shrimp during 16-week storage. In addition, the relationship between astaxanthin retention ratio and color retention ratio of dried shrimp was established. The degradation of astaxanthin and color loss was found to follow a first-order kinetic reaction; the temperature dependence of reaction constants was found to be well explained by the Arrhenius relationship. Drying shrimp at higher temperature led to lower astaxanthin degradation during storage than drying at lower temperatures. Storage of dried shrimp under vacuum atmosphere at low temperatures enhanced the retention of astaxanthin in dried shrimp. Good correlations between astaxanthin degradation and color changes were also observed.