

ABSTRACT

Jasmine Evangelista (01034210034)

EFFECT OF CONCENTRATION AND STORAGE CONDITION ON THE ANTHOCYANIN AND BETACYANIN STABILITY OF WATER-BASED DRAGON FRUIT EXTRACT IN MARSHMALLOW APPLICATION

Thesis, Faculty of Science and Technology (2025)

(xii + 41 pages; 15 figures; 13 tables; 9 appendices)

The increasing demand for natural colorants in food products highlights the need for stable and health-promoting alternatives to synthetic coloring. This research aimed to evaluate the effect of concentration and storage conditions on the stability of anthocyanins and betacyanins from red dragon fruit (*Hylocereus polyrhizus*) extract in a marshmallow application. Water-based dragon fruit extract (WDE) was prepared through maceration and concentrated using a rotary evaporator. Marshmallows were formulated with four different WDE concentrations (0.5%, 1%, 1.5%, and 2%) and stored under three different conditions (UV exposure, dark-room temperature (RT), and dark-cool (4°C)) for 14 days. The stability of total anthocyanins, betacyanins, phenolic content, antioxidant activity, and color were analyzed before and after storage. The results showed that both the WDE concentration and storage condition significantly affected pigment stability. Different WDE concentration for marshmallow applications significantly affected the total anthocyanin and betacyanin content when the addition of WDE was 1.5%. The addition of 1% and 1.5% WDE significantly affected the total phenolic content. Different storage conditions had significant effect toward marshmallow. The dark-cool (refrigerator) condition with the WDE concentration of 0.5% retained the most amount of total anthocyanin and total betacyanin, while the dark-RT (cupboard) retained the most amount of total phenolic content. There was no significant effect for WDE concentration and storage condition towards marshmallow's antioxidant activity.

Keywords : Marshmallow, natural colorant, red dragon fruit, storage stability
Reference : 46 (2005-2025)