Title Potential natural dye with antioxidant properties from red dragon fruit (*Hylocereus polyrhizus*)

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Abstract

Producing a deep purple-coloured flesh comparable to red beet or amaranth, dragon fruit (*Hylocereus polyrhizus*) is highly appealing in the European, Asian and the United States market. While consumers are more attracted to the exotic appeal of the fruit and its propagated wide palette of health benefits, this study addresses one pertinent issue which is exploring the possibilities of using dragon fruit as a source for natural dye. There is a huge global demand for an alternative natural red food colorant because the beetroot which has been the sole important betalain source has been found to certain risk to consumer's health. Hence, the dragon fruit which has the similar array of colour pigments found in beetroot and devoid of the drawbacks has been widely suggested as the alternative. This study aims to investigate the pigment extraction efficiency and stability in the dragon fruit, both from the pulp and peel in two different sets of experiment and the antioxidant properties in the pigments. For the pigment extraction efficiency and stability from fruit pulp, best water: weight ratio was 1:1; best temperature observed was 100°C; best extraction method was using juice concentrate rather than water extraction method where results showed that betalain concentration was at least twice higher; and the best storing condition varied according to different storage conditions. Both extraction methods exhibited stable pH reading after one week of storage. The beat condition to obtain highest betalain concentration from the peel was heating samples at 100°C; 5 minutes; and in a pH 5 condition. In the preliminary antioxidant properties study, the total polyphenol assay which expresses gallic acid as equivalent showed that there was 172.26 mg/g of total polyphenolic compound in dragon fruit dry extract and the reducing power in increased from 0.178 to 2.365 in 0.03g to 0.50g of sample.