

Evaluation of Physical and Sensory Properties of Encapsulated Dandila (*Dioscorea Alata*) Anthocyanin as a Natural Food Colourant

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Anthocyanins, a group of water-soluble, low-toxic substances with a wide range of colours, are one of the widespread natural pigments used in colouring foods. However, they are highly unstable and easily susceptible to degradation. Encapsulation is an effective way of protecting anthocyanin pigments from degradation while extending the shelf life. Still, certain anthocyanins produce unacceptable sensations in food products. Therefore, this study focused on assessing the physical and sensory properties of encapsulated Dandila anthocyanins to find out the potential of these pigments to use as a natural food colourant. As physical properties, dissolution, Water Solubility Index, and Water Absorption Index of encapsulated Dandila anthocyanins were measured using recommended procedures. An ice cream incorporated with encapsulated Dandila anthocyanins was used to determine the sensory properties of the encapsulated pigments. The formulation of ice cream consisted of 500 ml fresh milk, 8 g gelatin, 24 g corn flour, 12 g milk powder, 150 g white sugar, 250 ml water, and 60 g encapsulated Dandila pigment powder for the production of 1 l of ice cream. A panel of 30 untrained tasters evaluated the ice cream for colour, taste, texture, aroma, and overall acceptability using the five-point hedonic scale to determine consumer acceptance. Data were analyzed with the Minitab 19 statistical software. Dissolution, Water Solubility Index and Water Absorption Index of encapsulated pigment powder were recorded as 23.3 ± 1.5 s, 89.5 ± 1.0 %, and 1.4 ± 0.15 g, respectively, which were the preferable level. Median hedonic ratings for colour, aroma, taste, texture and overall acceptability of ice cream were recorded as 4.0 (Moderately like). According to the comments of the sensory panel, the addition of natural colourant had not produced any unacceptable sensation towards the panellists. Therefore, encapsulated Dandila anthocyanins consist of appropriate physical and sensory properties to be used as a natural food colourant for colouring ice cream. Further, this colourant has the potential as a natural colourant for foods stored under frozen conditions.

Keywords: *Anthocyanin, Dandila, Dioscorea alata, natural colourant*