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Effect Of Acidification and Types of Solvent on Anthocyanin Yield, Total Phenols, Flavonoids, Antioxidant Activity and Colour Value from UMKL Roselle Calyces' Extraction (*Hibiscus Sabdariffa L.*)

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Structured Abstract

Background: Numerous food and cosmetic products have been made with colour. A food product's colour is thought to be related to the food's flavour, consistency, and nutritional content. Synthetic food colouring agents are frequently used because of their high stability and inexpensive cost compared to natural colourant. *Hibiscus sabdariffa L.* is rich in anthocyanin and due to its high anthocyanin content, roselle has historically been used to make an attractive red beverage. However, the drawbacks of naturally derived colouring agents from roselle calyces include lowered stability and colouring capacity, mutual interaction with food ingredients, and the inability to customise hues as desired. Roselle calyces' colourants may degrade over time due to exposure to light, heat, or pH variations. The purpose of this research is to identify the best solvent and extraction condition to obtain the highest percentage yield of roselle colourant from different varieties and to determine which types of roselle variety will give high total anthocyanin yield, total phenols, flavonoids, and highest antioxidant activity.

Methods: Solid-liquid extraction was done to extract the anthocyanin pigments from roselle powder. 10 g of roselle powder was mixed with different solvents such as distilled water and ethanol and acidified using 1% citric acid and 1% acetic acid. An hour of hot maceration extraction was conducted at 50°C. Filter paper was used to separate solid particles from the liquid extract, which was then concentrated to dryness using a rotating vacuum evaporator at 60°C

Results: This research indicates the successful extraction of natural colourant from *Hibiscus sabdariffa L.*, which yields red colour from the anthocyanin through solid-liquid extraction under various conditions. The calyces are rich in anthocyanin, ascorbic acid, and hibiscus acid. The chemical components contained in the flowers of *Hibiscus sabdariffa* include anthocyanins, flavonoids, and polyphenols.

Conclusion: In conclusion, results showed that treatments with ethanol extract (50% v/v) have the highest value of the total anthocyanin yield (422.48 mg/100g), total phenols (240.10 mg GAE/100g), flavonoids (10.70 µg QE/g), and highest antioxidant activity (118.68) compared to other treatments in this research thus ethanol was the best solvent and extraction condition to extract anthocyanin pigment in roselle calyces.

Keywords: Natural Dyes, *Hibiscus sabdariffa L.*, Solid liquid extraction, Anthocyanin

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