

Physicochemical Properties, Proximate Composition, and Carotenoid Content of *Momordica cochinchinensis* L. Spreng (Gac) Fruit

ABSTRACT

The study aims to determine the physical and chemical properties of *Momordica cochinchinensis* L. Spreng (gac) fruits. Fruit size varied, weighing 359.17 to 588.33g, with lengths of 11.10 to 13.92 cm and circumferences of 27.43 to 30.67 cm. Components included pulp (34.06 to 41.58%), seeds (23.11 to 29.70%), peel (16.65 to 20.60%), and aril (15.64 to 18.64%). Skin and aril colour parameters (L^* , a^* , b^*) indicated maturity and carotenoid content. Aril had higher acidity (pH 5.54 ± 0.02 , titratable acidity [TA] 0.03 to 0.05g/L), total soluble solids (TSS, $11.57\% \pm 0.52$ °Brix), and carbohydrates (55.6 g/100 g) than pulp (pH 5.65 ± 0.02 , TA 0.01 to 0.02g/L, TSS $4.90\% \pm 0.33$ °Brix, carbohydrates 30.9 g/100 g). Peel contained most protein (6.2 g/100 g) and dietary fibre (56.9 to 58.1 g/100 g). Glucose and fructose were found in both pulp and aril. Potassium levels were highest in peel (817.59 mg/100 g), followed by pulp (658.20 mg/100 g) and aril (228.79 mg/100 g). Lycopene dominated carotenoids, especially in aril (31.7 to 103.7 mg/g). β -carotene, lutein, astaxanthin, and zeaxanthin were also present. β -carotene (2.9 to 9.6 mg/g) was second to lycopene, followed by astaxanthin (1.54 to 4.91 mg/g), lutein (0.16 to 1.35 mg/g), and zeaxanthin (0.35 to 1.49 mg/g), absent in pulp. These findings have implications for the food industry, offering insights into gac fruit's nutritional potential. Malaysian gac exhibited superior nutritional content, with pulp and aril as notable sources of carbohydrates and minerals for consumption and aril as a promising source of healthy oils.