

Antioxidant compounds and capacities of Gac (*Momordica cochinchinensis* Spreng) fruits

ABSTRACT

Objective: To identify and determine the composition of antioxidant compounds, and to evaluate the antioxidant abilities of Gac fruit parts (peel, pulp, seed and aril) grown in Malaysia.

Methods: LC-MS/MS was used for identification of antioxidant compounds and UV-Vis for estimation of the contents of phenolics, flavonoids, and carotenoids. Lycopene and β -carotene were quantified using high-performance liquid chromatography. DPPH (2, 2-diphenyl-1-picrylhydrazyl) and ferric reducing antioxidant power assays were employed to evaluate antioxidant capacities.

Results: Phytochemicals were found amongst all the fruit parts. Notably, significant amounts of carotenoids [(107.4 \pm 4.5), (85.7 \pm 4.4), (110.6 \pm 2.1) mg/100 g dry weight (DW)], and relatively high levels of both phenolics [(27.3 \pm 1.7), (28.9 \pm 2.4), (30.8 \pm 2.7) mg/100 g DW] and flavonoids [(38.1 \pm 2.2), (8.8 \pm 1.3), (24.5 \pm 3.3) mg/100 g DW] were found in the fruit's peel, pulp and aril, respectively. Seed part also showed a relatively high level of flavonoids [(18.1 \pm 2.3) mg/100 g DW]. Lycopene and β -carotene were found to be significantly high ($P < 0.05$) in aril [(579.3 \pm 22.7) and (621.0 \pm 35.0) μ g/g DW], followed by peel [(51.0 \pm 7.5) and (210.0 \pm 12.5) μ g/g DW] and pulp [(37.6 \pm 10.9) and (205.6 \pm 22.1) μ g/g DW]. Antioxidant assays revealed that aril possessed the highest scavenging activity (IC₅₀ = 865 μ g/mL), while the peel possessed the highest ferric reducing power of 140 μ mol FeSO₄/ μ g.

Conclusions: The current results demonstrate that Gac fruit grown in Malaysia is a rich source of phytochemicals, especially carotenoids, and possesses antioxidant activities. Thus, such findings suggest Gac fruit as a source of an antioxidant plant.

Keyword: *Momordica cochinchinensis*; Phytochemicals; Carotenoids; Antioxidants; Polyphenols; High-performance liquid chromatography