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Study on the antioxidant activity of mangosteen (*Garcinia mangostana)*

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Water and ethanolic extracts of mangosteen peel and the pulp prepared using different extraction methods were assessed for total phenolic content, flavonoid content, free radical scavenging activity, ferrous ion chelating activity, and ferric ion reducing activity. The phenolic content was significantly ($P < 0.05$) higher in the water brew and lower in the 96% ethanolic extract. The respective values were 304.56 mg GAE/g and 36.07mg GAE/g. The flavonoid content was significantly ($P < 0.05$) higher in the water brew: 9.0 mg QE/g. DPPH radical scavenging activity was low in the fruit pulp than in the peel. Considering the peel extracts, DPPH radical scavenging activity was significantly ($P < 0.05$) higher in water brew and IC_{50} value was 0.02 mg/ml. The ferrous ion-chelating effect and ferric ion reducing power of all peel extracts (2 mg/ml) were low. Furthermore, the water distillate did not show positive results for any of the above assays. Water brew of mangosteen peel with high antioxidant activity, was incorporated into a carbonated beverage at 1:19 ratio of water brew to beverage combination. The IC_{50} values of the beverage and the new formulation were 31.34 mg/ml and 13.76 mg/ml respectively. The enhancement of the radical scavenging activity of the beverage was over two folds. This study reveals that mangosteen has a considerably high antioxidant power in the hot water brew. Furthermore, the extract can be utilized to enhance the antioxidant capacity of beverages.

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