Lihat Sebelah

DETERMINATION OF ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND CAROTENOID CONTENT OF PUMPKIN (*Cucurbita maxima*)

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DECLARATION

I hereby declare that this research project is based on my original work except for quotations and summaries that have been duly acknowledged.

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ABSTRACT

This study was conducted to evaluate the antioxidant activity, total phenolic and carotenoid content of extracts from peel, flesh and seed of *Cucurbita maxima*. Methanol and ethyl acetate were used as extracting solvent of antioxidant activity and total phenolic content. Hexane was used as extracting solvent of carotenoid. Antioxidant activity was measured by using Ferric Thiocyanate (FTC) method, total phenolic content was measured by using Folin-Ciocalteu method and carotenoid content was measured by using High Pressure Liquid Chromatography (HPLC) method. The results showed all samples tested exhibited considerably high antioxidant activity as compared to α-tocopherol (natural antioxidant) and BHT (synthetic antioxidant). The methanol and ethyl acetate extracts of all samples tested showed significantly ($p<0.05$) higher antioxidant activity compared to α-tocopherol. Methanol extract of peel and ethyl acetate extracts of all samples showed significantly ($p<0.05$) higher antioxidant activity compared to BHT. All samples tested showed higher total phenolic content in methanol extracts rather than in ethyl acetate extracts. The flesh of *C. maxima* exhibited significantly ($p<0.05$) highest β-carotene content among the samples tested. The results of this study strongly showed that the peel, flesh and seed of *C. maxima* could be used as easily accessible source of natural antioxidant and as a possible food supplement, functional food or in pharmaceutical industry.

ABSTRAK

Tujuan kajian ini dijalankan adalah untuk menentukan aktiviti antioksidan, kandungan fenolik dan karotenoid dalam kulit, isi dan biji labu merah (*Cucurbita maxima*). Metanol dan etil asetat digunakan sebagai pelarut pengekstrakan aktiviti antioksidan dan kandungan fenolik. Heksana digunakan sebagai pelarut pengekstrakan karotenoid. Aktiviti antioksidan ditentukan dengan menggunakan kaedah Ferik Thiosianat (FTC), kandungan fenolik ditentukan dengan menggunakan kaedah Folin-Ciocalteu dan kandungan karotenoid ditentukan dengan menggunakan kaedah Kromatografi Cecair Bertekanan Tinggi (HPLC). Hasil keputusan menunjukkan bahawa semua sampel mengandungi aktiviti antioksidan yang agak tinggi jika dibandingkan dengan α-tokoferol (antioksidan semulajadi) dan BHT (antioksidan sintetik). Semua sampel dari ekstrak metanol dan etil asetat menunjukkan aktiviti antioksidan yang lebih tinggi secara signifikan ($p<0.05$) berbanding dengan α-tokoferol. Kulit dari ekstrak metanol dan semua sampel dari ekstrak etil asetat menunjukkan aktiviti antioksidan yang lebih tinggi secara signifikan ($p<0.05$) berbanding dengan BHT. Semua sampel yang dikaji menunjukkan kandungan fenolik yang lebih tinggi dalam ekstrak metanol berbanding dengan ekstrak etil asetat. Isi daripada *C. maxima* mengandungi kandungan β-karoten yang paling tinggi secara signifikan ($p<0.05$) antara semua sampel yang dikaji. Hasil kajian menunjukkan bahawa kulit, isi dan biji dari *C. maxima* boleh digunakan dengan mudah sebagai antioksidan semulajadi dan berpotensi digunakan sebagai suplemen, makanan berfungsi dan dalam industry farmaseutikal.