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**EXTRACTION AND EVALUATION OF ANTIOXIDANT IN 'MAS COTEK'
(*Ficus deltoidea* Jack)**

MOHD EZWAN BIN MOHD EDRIS

**RESEARCH PROJECT submitted in partial fulfillment of the requirement for the
degree of Bachelor of Food Science (Food Service and Nutrition)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
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DECLARATION

I hereby declare that the thesis is based on my original work except for the quotations and citations which have been duly acknowledge. I also declare that it has not been previously or currently submitted for any degree at Universiti Malaysia Terengganu (UMT) or other institutions.

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ABSTRACT

Antioxidants are well known for its inhibitory activity against free radical damages either in food products or health. Recently, many studies have been carried out and found that natural sources such as plants and herbs possess a strong antioxidative activity. Realizing the benefits of antioxidant to human health, this study was conducted to determine the antioxidative activity of various extract of *Ficus deltoidea* leaf and stem. Methanol and ethyl acetate were used as extraction solvent. The antioxidant activity was measured by using Ferric Thiocyanate method (FTC). Proximate analysis were carried out to determine the nutrient composition of leaf, stem and fruit of *Ficus deltoidea*. For the chemical analysis, there is significant difference ($p < 0.05$) on the moisture, ash, protein, and fiber for leaf, stem, and fruit of 'Mas Cotek' (*Ficus deltoidea*). For the solvent analysis, there is significant difference for each sample which were extracts using different solvent and different drying method. As for antioxidant analysis using FTC method, different solvent used showed significant difference ($p < 0.05$) in antioxidative activities of samples dried using hot air and freeze drying. It was found that freeze drying preserved more of the antioxidant activities in methanol and ethyl acetate extract of 'Mas Cotek'. All methanol 'Mas cotek' leaf and stem have the antioxidant activities which were good a Butylated Hydroxytoluene (BHT). All methanol 'Mas Cotek' sample showed significantly higher ($p < 0.05$) antioxidative activity compared to α -tocopherol (0.782 ± 0.054). Besides this, all ethyl acetate 'Mas Cotek' extracts showed significantly higher ($p < 0.05$) antioxidative activity compared to α -tocopherol (0.782 ± 0.054).

PENGEKSTRAKAN DAN PENENTUAN ANTIOKSIDA DI DALAM MAS COTEK (*Ficus deltoidea*)

ABSTRAK

Antioksidan di kenali dengan fungsi untuk menghalang aktiviti kerosakan radikal bebas samada di dalam produk makanan ataupun kesihatan. Kebelakangan ini, banyak kajian telah di buat dan di dapati bahawa sumber semulajadi seperti tumbuh-tumbuhan dan herba-herba mengandungi aktiviti antioksidan yang kuat. Menyedari kelebihan antioksidan kepada kesihatan manusia, kajian ini dilakukan adalah untuk mengetahui aktiviti antioksidan pelbagai jenis ekstrak bagi batang dan daun *Ficus deltoidea*. Di sini, metanol dan etil asetat di gunakan sebagai pelarut untuk mengekstrak sampel. Aktiviti antioksidan ini di kaji dengan menggunakan *Ferric Thiocyanate Method* (FTC). Untuk analisis kimia, terdapat perbezaan yang signifikan ($p < 0.05$) terhadap kandungan lembapan, abu, protein, fiber dan lemak bagi sampel daun, batang, dan buah 'Mas Cotek' (*Ficus deltoidea*). Untuk analisis pelarut, dapat di lihat terdapat perbezaan yang signifikan pada $p < 0.05$ terhadap setiap sampel yang diekstrak menggunakan pelarut yang berlainan serta kaedah pengeringan sampel yang berlainan. Bagi analisis antioksidan dengan menggunakan kaedah FTC, penggunaan pelarut yang berlainan memberikan perbezaan yang signifikan ($p < 0.05$) dalam aktiviti antioksidan yang menggunakan sampel yang dikeringkan melalui pengeringan sejukbeku dan juga pengeringan oven. Di sini, dapat di lihat pengeringan sejukbeku lebih menyimpan aktiviti antioksidan dalam ekstrak 'Mas Cotek' dengan menggunakan pelarut metanol dan etil asetat. Kesemua daun dan batang 'Mas Cotek' mengandungi aktiviti antioksidan yang sama bagus dengan Butylated Hydroxytoluene (BHT). Keseluruhan sampel 'Mas Cotek' yang diekstrak menggunakan metanol menunjukkan bahawa terdapat perbezaan aktiviti antioksidan yang besar ($p < 0.05$) berbanding α -tocopherol (0.782 ± 0.054). Selain ini, keseluruhan ekstrak 'Mas Cotek' menggunakan pelarut etil asetat juga menunjukkan perbezaan aktiviti antioksidan yang besar ($p < 0.05$) jika dibandingkan dengan α -tokopherol (antioksidan semulajadi; 0.782 ± 0.054)