ANTIOXIDANT ACTIVITY OF THE FRUITS OF *FICUS DELTOIDEA* VAR *ANGUSTIFOLIA SP.* (MAS COTEK)

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ABSTRACT

This study was aimed at detecting the presence of alkaloids, flavonoids and terpenes and also to compare the antioxidant activities of hexane, chloroform and methanol extracts of sample from fruits of *Ficus deltoidea (*var *angustifolia sp.)*. This experiment used successive extraction method for the extraction process using three solvents of different polarity (hexane, chloroform and methanol). The antioxidant activity was determined by four methods; Total Phenolic Content (TPC) method, Ferric Thiocyanate (FTC) method, Thiobarbituric Acid (TBA) method while the radical scavenging activity was measured by the 2,2-diphenyl-1-picryhydrazyl (DPPH) method. All tested extracts exhibited very strong antioxidant potential. The hexane extract showed the highest percent inhibition followed by methanol extract and chloroform extract as compared to quercetin and vitamin E. In the FTC method, the hexane extract showed the strongest antioxidant activity (97.78%) followed by methanol extract (96.69%) and chloroform extract (93.53%). In the TBA assay, the hexane extract showed the strongest antioxidant activity (95.58%) followed by methanol extract (91.40%) and chloroform extract (90.70%). In the DPPH method, the chloroform extract from fruits of *Ficus deltoidea (*var *angustifolia sp.)* exhibited the strongest radical scavenging activity (103.83%) followed by methanol extract (95.90%) as compared to quercitin as reference standard. A similar trend was observed for total phenolic content (TPC) where the hexane extract of fruits of *Ficus deltoidea (*var *angustifolia sp.)* showed the greatest total phenolic content (12.96 ppm) followed by methanol extract (12.26 ppm) and chloroform extract (7.96 ppm).

ABSTRAK

Kajian ini bertujuan untuk mengesan kehadiran kandungan saponin, alkaloid, flavonoid and terpene dan juga menentukan perbandingan jumlah aktiviti antioksida pada sampel buah Mas Cotek atau nama saintifiknya *Ficus deltoidea (*var *angustifolia sp.).* Eksperimen ini menggunakan kaedah ekstrak secara berturut-turut untuk proses ekstrak dengan menggunakan tiga pelarut yang mempunyai kepolaran yang berbeza (hexane, klorofom dan metanol). Empat kaedah berbeza iaitu kaedah Jumlah Kandungan Phenolic (TPC), kaedah Kandunagn Ferric Thiocyanate (FTC), kaedah Thiobarbituric Acid (TBA) dan manakala aktiviti radikal perencatan telah diukur menggunakan kaedah Perencatan Aktiviti Radikal (DPPH). Semua ujian menunjukkan aktiviti antioksida adalah sangat tinggi dimulai dengan ekstrak hexane dan diikuti dengan ekstrak methanol dan ekstrak klorofom jika dibandingkan dengan Quercitin and Vitamin E. Dalam kaedah FTC, ekstrak hexane menunjukkan kadar antioksida tertinggi (97.78%) diikuti ekstrak metanol (96.69%) dan ekstrak klorofom (93.53%). Dalam kaedah DPPH, buah *Ficus deltoidea (*var *angustifolia sp.)* menunjukkan kadar perencatan tertinggi pada ekstrak klorofom dengan nilai IC_{50} (103.83%) diikuti dengan ekstrak metanol (95.90%) apabila menggunakan quercitin sebagai rujukan. Sama seperti kaedah yang lain, kaedah TPC untuk buah *Ficus deltoidea (*var *angustifolia sp.)* menunjukkan jumlah kandungan phenolic tertinggi pada ekstrak hexane 12.96 ppm, diikuti ekstrak metanol 12.26 ppm dan ekstrak klorofom 7.96 ppm.

CHAPTER 1

INTRODUCTION

1.1 General introduction

Some people in the world consume natural plant as traditional medicine. About eighty percent of the world depends on herbal-based alternative systems of medicine (Daniel, 2006). There are more than 35,000 plants species (including the lower plants) being consumed in various human cultures around the world for medicinal purpose. About 1,200 species of higher plants in Peninsular Malaysia and 2,000 species in Sabah and Sarawak reported to have medicinal values and have been used for generation in various traditional health care systems (Soepadmo, 1992). These plants were used for various purposes for our body such as nutrition, maintenance, reproduction, healing, defense, offense, etc.

Our bodies are protected from oxidative damage of free radicals by various antioxidants with different functions, which constitute a defense system independently, comparative or even synergistically. Free radicals are highly reactive compounds that are inherently unstable since they contain more energy than they need. They are created in the body during normal metabolic functions or introduced from the outside environment. To reduce their extra energy, free