

**DETERMINATION OF PHENOLIC CONTENT AND ITS EFFECT ON
ANTIOXIDANT ACTIVITY IN SELECTED EDIBLE PLANTS**

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ABSTRACT

DETERMINATION OF PHENOLIC CONTENT AND ITS EFFECT ON ANTIOXIDANT ACTIVITY IN SELECTED EDIBLE PLANTS

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The main objectives of this final year project are to determine the total phenolic content and antioxidant activity in 6 selected edible plants and also to evaluate the relationship between total phenolic content and antioxidant activity in the plants. Six edible plants namely kesum leaves, pucuk manis, mint, ulam raja, selom leaves and tapioca shoot were selected for this study. The total phenolic content in the plants were determined by using drying method and direct spectrophotometric absorption at 750nm against a standard calibration curve with gallic acid as standard. The amount of total phenolic content determined by using the drying method were 9.72%, 7.66%, 6.34%, 5.25%, 3.31% and 0.57% in kesum leaves, selom leaves, tapioca shoots, mint, ulam raja and pucuk manis, respectively. Kesum leaves, selom leaves, tapioca shoots, ulam raja, pucuk manis and mint contained 109.96mg, 65.58mg, 36.54mg, 32.06mg, 26.07mg and 12.71mg of total phenolic content per 100g of the plants determined by using the spectrophotometer method. The percentage of antioxidant activity in the plants was expressed as the percentage of inhibition relative to the control. The measurement of antioxidant activity by the β -carotene bleaching method showed that the antioxidant activity in the samples were 42.24%, 25.64%, 20.51%, 12.82% 12.70%, and 8.06% respectively, which were significantly lower than those of the standards tocopherol 50 ppm (71.79%) and BHT 50 ppm (53.48%). The correlation coefficient value obtained for total phenolic content determined by using drying method and the antioxidant activity was $r^2 = 0.6273$, while the correlation coefficient value obtained for total phenolic content determined by using spectrophotometer method and the antioxidant activity was $r^2 = 0.5172$.

CHAPTER 1

INTRODUCTION

Dietary factors play an important role in human health and in the development of certain chronic diseases especially cancer, heart-diseases and diabetes and also age-dependent diseases such as cataract, joint pains, impaired brain function and the premature onset of aging systems such as skin wrinkling, hair graying, absent mindedness and chronic fatigue.

Daily consumption of antioxidant food could reduce the risk of acquiring chronic diseases and slow down the progress and appearances of aging systems. Humans daily ingest a large amount of phenolic compounds. The amount of ingestion of plant phenolics is proportional to the consumption of fruits and vegetables. However, almost all fresh fruits and vegetables contain rich amounts of naturally occurring phenolic compound such as flavonoids.

Scientific and commercial interest in phenolic compounds in food has been extremely active in recent years. Phenolic compounds aid in the maintenance of food, fresh flavour, taste, colour and prevention of oxidation deterioration. In particular, many phenolic compounds are attracting the attention of food and medicinal scientists because of their antioxidative, anti-inflammatory, antimutagenic and anticarcinogenic properties and their capacity to modulate some key cellular enzyme functions.