

**DETERMINATION OF ANTIOXIDANT PROPERTIES IN *Murraya*
koenigii AND *Eugenia polyantha* LEAVES**

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ABSTRACT

DETERMINATION OF ANTIOXIDANT PROPERTIES IN *Murraya koenigii* AND *Eugenia polyantha* LEAVES

Nowadays, interest in plant-derived food additives has grown, mainly because synthetic antioxidants suffer from several drawbacks. Furthermore, plant extracts have been shown to possess health-promoting properties. In the present studies, water and ethanolic extracts of *Murraya koenigii* (curry) and *Eugenia polyantha* (salam) were investigated for their antioxidant activity, total phenolic and total flavonoid content. The antioxidant assay used were β -carotene bleaching assay, 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity assay and Ferric reducing power assay using in vitro spectrophotometric methods. The antioxidant activities of water and ethanol extract for both samples also had been compared to investigate the effects of antioxidant activities using different extraction medium. The extracts of both curry and salam leaves showed high antioxidant activities with up to 97% and 89% respectively. All antioxidants assays showed that standard BHT exhibit higher antioxidant activities followed by salam leaves and curry leaves. Both curry and salam leaves showed high phenolic content in water extracts compared with ethanolic extracts. Total phenolic content was in range of 0.072g to 1.460g GAE in 100g of sample. For total flavonoid content, both curry and salam leaves showed high flavonoid content in ethanolic extracts than water extracts. A positive correlation was shown between antioxidant activity and total phenolic content. The correlation between total phenolic content with β -carotene bleaching assay, DPPH radical scavenging activity assay and Ferric reducing power assay were $R^2=0.475$, $R^2=0.975$, $R^2=0.927$ respectively. However, a negative correlation was shown between antioxidant activities and total flavonoid content. This showed that phenolic compound might contributed to the antioxidant activities in both curry and salam leaves.

CHAPTER 1

INTRODUCTION

1.1 Background of study

The breathing process and various other reactions taking place in the human body cause the formation of free radicals. There is increasing evidence from scientific research that these reactive forms of oxygen cause damage to cells, leading to cancer, inflammation, or unfavourable changes in blood vessels. The damage caused by excessive production of free oxygen radicals contributes to many common illnesses, such as: cardiovascular disease, certain prenatal complications, malignant tumors, inflammations, cataracts, Parkinson's disease and Alzheimer's disease, as well as accelerating the ageing process (Ghiselli *et al.*, 2000).

The human body has several mechanisms to counteract damage by free radicals and other reactive oxygen species. These act on different oxidants as well as in different cellular compartments. One important line of defence is a system of enzymes, including glutathione peroxidases, superoxide dismutases and catalase, which decrease concentrations of the most harmful oxidants in the tissues. The second line of defence against free radical damage is the presence of antioxidants. An antioxidant is a molecule stable enough to donate an electron to a rampaging free radical and neutralize it,