

**DETERMINATION OF CONCENTRATION OF β -CAROTENE AND
ANTIOXIDANT ACTIVITY IN SELECTED TROPICAL EDIBLE PLANTS**

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ABSTRACT

DETERMINATION OF CONCENTRATION OF β -CAROTENE AND ANTIOXIDANT ACTIVITY IN SELECTED TROPICAL EDIBLE PLANTS

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The action of β -carotene and other carotenoids as antioxidant has recently attracted widespread attention. Yellow and green vegetables or fruits are the main sources of antioxidant vitamin making these foods essential to human health. Recent research also has shown the β -carotene compounds have anti cancer, anti aging and anti heart disease. The objectives of this study was to determine the concentration of β -carotene and antioxidant activity in tropical edible plants. The plants used for this study were kesom (*Polygonus minus Huds*), mint (*Mentha arrensis Linn*), selom (*Oenanthe javanica*), cekur manis (*Sauropus andrygonus*), ulam raja (*Cosmos caudatus*) and tapioca shoot (*Manihot utilissima*). HPLC and UV spectrophotometer were the best method to determine the concentration of β -carotene and antioxidant activity in plants respectively. The concentration of β -carotene obtained in this study were in the range of 12.22 – 922.26 mg/100 g for edible portion of the samples. Ulam raja (*Cosmos caudatus*) contained significantly ($p \leq 0.05$) the highest amount of β -carotene, 922.26 mg/100 g of edible portion of samples. The sequence of the concentration of β -carotene in these samples is ulam raja > selom > tapioca shoot > cekur manis > kesom > mint. For antioxidant activity, the standard of tocopherol (50 ppm) had significantly ($p \leq 0.05$) the highest, followed by BHT (50 ppm). Antioxidant activity of the six edible plants were in the range of 12.7 – 42.24 %. Kesom (*Polygonus minus Huds*) had significantly ($p \leq 0.05$) the highest antioxidant activity (42.24 %) when compared with other plant samples. The sequence of antioxidant activity in these samples was tocopherol (50 ppm) > BHT (50 ppm) > kesom > mint > tapioca shoot > selom > cekur manis > ulam raja.

CHAPTER 1

INTRODUCTION

β -carotene is the main and sometimes only source of vitamin A activity in most vegetables although there are more than 500 known carotenoids present in foods, 32 of which are thought to have vitamin A activity (Bauernfeind, 1972). Certain carotenoids also possess vitamin A activity and of these β -carotene is the most widespread and biologically most active (Green, 1970). β -carotene is present in green leaves, where its color is masked by that of chlorophyll.

In recent years great interest has been focused on antioxidant vitamin especially β -carotene particularly because of its likely role in the prevention of heart disease and cancer (Coulter, 1996). The evidence that the antioxidant nutrient β -carotene may play a much more important role in our health and well-being is growing rapidly. The knowledge gained by the nutritionist and biochemists will ultimately require a technical transformation to achieve successful application in foods.

Yellow and green vegetables or fruits are the main sources of antioxidant vitamins making these foods essential to human health. Recent research also has shown that β -carotene compounds have anti cancer, anti aging and anti ulcer