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FACULTY OF DISTANCE EDUCATION
DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY
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SUMMARY REPORT

SCHOOL OF BIOTECHNOLOGY AND FOOD SCIENCE
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Nutritional compositions and antioxidative activity of torch ginger's (*Etilingera elatior*) bud, flower, leaf and rhizome / Siti Hajar Jewahid.

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Lihat Sebelah

HAK MILIK
PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

**NUTRITIONAL COMPOSITIONS AND ANTIOXIDATIVE ACTIVITY OF TORCH GINGER'S
(*Ettingera elatior*) BUD, FLOWER, LEAF AND RHIZOME**

SITI HAJAR BINTI JEWAHID

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

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DECLARATION

I hereby declare that this research project is based on my original work except for quotations and summaries which have been duly acknowledged.

15th June 2006



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ABSTRACT

In this study, the nutritional composition and antioxidative activity of various part of torch ginger's plant were observed. The samples were : bud, flower, leaf and rhizome of torch ginger (*Etilingera elatior*). The aim of this study was to determine proximate analysis of sample involved, determine the antioxidative activity by using ferric thiocyanate method (FTC) and determine total phenolic compounds by Follin-Ciocalteu method . From proximate analysis, there were no significance difference ($p < 0.05$) of moisture content in all samples. Rhizome presented the highest mineral content in ash determination. Protein and lipid percentages in all samples were assumed as too low and there were no significance difference ($p < 0.05$) between bud and flower, and also no significance difference ($p < 0.05$) between leaf and rhizome of torch ginger. All samples were higher in carbohydrates. Methanol (polar) and ethyl acetate (non-polar) were used in antioxidant analyses as extracting solvent. Butylated hydroxytoulene (BHT), synthetic antioxidant and α -tocopherol, natural antioxidant were used as a standard. Among the samples tested, ethyl acetate extracts of torch ginger's rhizome presented the highest antioxidative in both methanol and ethyl acetate extracts and it is more efficient in inhibiting lipid oxidation than α -tocopherol. There were no significance difference ($p < 0.05$) of methanol extracts of torch ginger's bud and flower. The antioxidative activity of leaf extracts was lower compared to BHT and close to α -tocopherol. In total phenolic compound determination, all samples of ethyl acetate has no significance ($p < 0.05$) difference. While in methanol extracts, there were no significance ($p < 0.05$) difference between bud and leaf extracts. In this study, rhizome in methanol extracts presented the highest phenolic compounds.

KOMPOSISI NUTRIEN DAN AKTIVITI ANTIOKSIDA DALAM KUDUP, BUNGA, DAUN, DAN AKAR KANTAN (*Etilingera elatior*)

ABSTRAK

Dalam kajian ini, komposisi nutrien dan kandungan antioksidasi bagi pelbagai bahagian pokok kantan telah dikenalpasti. Sampel yang terlibat adalah bahagian kudup, bunga, daun dan rizom pokok kantan (*Etilingera elatior*) digunakan. Tujuan utama kajian ini dijalankan adalah untuk mengenalpasti nilai proksimat setiap sampel, mengenalpasti aktiviti antioksidasi dengan menggunakan kaedah ferric thiocyanate (FTC), dan mengenalpasti kandungan fenolik sampel menggunakan kaedah Follin-Ciocalteu. Dari kajian yang dijalankan, tidak terdapat perbezaan signifikan ($p < 0.05$) untuk kandungan lembapan. Rizom mengandungi kandungan mineral yang paling tinggi dibandingkan sampel lain. Manakala, peratus lipid dan protein dalam setiap sampel adalah sangat rendah dan tidak terdapat perbezaan signifikan ($p < 0.05$) diantara kudup dan bunga kantan, juga tidak terdapat perbezaan signifikan ($p < 0.05$) antara daun dan rizom kantan. Kandungan karbohidrat dalam setiap sampel adalah tinggi. Dalam penentuan aktiviti antioksidasi, methanol (polar) dan etil asetat (tidak polar) digunakan sebagai larutan pengekstrak. Antioksidasi sintetik iaitu Butylated hydroxytoluene (BHT) dan antioksidasi semulajadi iaitu α -tocopherol digunakan dalam penentuan antioksidasi menggunakan FTC dan Follin-Ciocalteu. Rizom kantan didapati mengandungi aktiviti antioksidasi tertinggi dalam kedua-dua ekstrak methanol dan etil asetat. Rizom juga didapati lebih efisien dalam merencatkan pengoksidaan lipid dibandingkan dengan α -tocopherol. Tidak terdapat perbezaan signifikan ($p < 0.05$) antara ekstrak kudup dan bunga kantan. Manakala aktiviti antioksidasi dalam daun kantan adalah lebih rendah dibandingkan dengan BHT dan α -tocopherol. Dalam penentuan kandungan fenolik pula, semua ekstrak sampel bagi etil asetat tidak mempunyai perbezaan signifikan ($p < 0.05$). Manakala, dalam ekstrak metanol juga tidak terdapat perbezaan signifikan ($p < 0.05$) antara ekstrak daun dan kudup. Dalam TPC, didapati rizom mengandungi kandungan fenolik paling tinggi.