

THE IDENTIFICATION OF FATTY ACID COMPOSITION
IN THE OIL FROM CEKUR
(*Kaempferia galanga* Linn.)

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THE IDENTIFICATION OF FATTY ACID COMPOSITION
IN THE OIL FROM CEKUR
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BY

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To my Pa and Mi ...

Thank you for the unconditional love and breath of life you've given me

You are the greatest

To my Edward...

Thank you for your thoughtfulness

To my Bobbie...

Thank you for your companionship

To my Ming...

Thank you for your endless love and care

You are my inspiration

To my late Uncles, Mr. Ho Kent and Mr. Chin Wee Sim...

May the good Lord bless your kind soul

To the Heavenly One...

Thank you for the strength you've laid upon me

'I can do everything through him who gives me strength.'

Philippians 4:13

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ABSTRACT

A study was conducted in the laboratory of Biology, University Putra Malaysia Terengganu to determine the moisture, ash, raw fibre and fat content in the fresh rhizomes of cekur (*Kaempferia galanga* Linn.).

Results from the Proximate Analysis showed that the rhizomes of cekur contained 10.5% of moisture, 5% of ash, 1.7% of raw fibre and 2% of fat. The oil extracted from the rhizomes of cekur was a dark brown viscous liquid with the characteristic odour and flavour of the essential oil from cekur. From the analysis carried out, the rhizomes of cekur contained about 0.7% of total lipid.

From the gas chromatography (GC) analysis, a number of major fatty acids composition were obtained. Palmitic acid (C16:0) scored the highest at 44.33 mgg⁻¹ (19.95%) among the saturated fatty acids. C20: 1ω9 scored the highest among the mono unsaturated fatty acids at 34.50 mgg⁻¹ or 15.52%. *Gamma*-linolenic acid (GLA, C18: 3ω6) recorded the highest amount in each gram of dry weight of the sample (36.06 mgg⁻¹) (16.23%) among the polyunsaturated fatty acids (PUFA). As for eicosapentaenoic acid (EPA, C20: 5ω3) and docosahexaenoic acid (DHA, C22: 6ω3), they only occurred in small amount, totalling 4.62 mg (2.08%) and 0.67 mg (0.30%) in each gram of dry weight of the sample respectively.

ABSTRAK

Satu kajian penentuan kandungan kelembapan, abu, serabut mentah dan lemak dalam rizom cekur (*Kaempferia galanga* Linn.) telah dijalankan di makmal Biologi, Universiti Putra Malaysia Terengganu.

Keputusan yang diperolehi daripada Analisis Proksimat menunjukkan bahawa rizom cekur mengandungi 10.5% kelembapan, 5% abu, 1.7% serabut mentah dan 2% lemak. Hasil ekstrakan rizom cekur telah menghasilkan sejenis cecair pekat yang berwarna perang kehitaman dan mempunyai bau, hasil daripada minyak pati tumbuhan cekur itu sendiri. Ujian penentuan kandungan 'total lipid' yang telah dijalankan mendapati bahawa cekur mengandungi 0.7% 'total lipid'.

Melalui analisis yang telah dijalankan oleh kromatografi gas, kehadiran beberapa komposisi utama asid lemak telah dikenalpasti. Didapati bahawa minyak cekur mempunyai kandungan asid palmitik (C16: 0) yang paling tinggi di kalangan asid lemak tepu, iaitu 44.33 mg (19.95%) dalam setiap gram berat kering sampel. Kandungan komponen C20: 1 ω 9 adalah tertinggi di kalangan asid lemak mono tak tepu iaitu 34.50 mgg⁻¹ atau 15.52%. Kandungan asid linolenik-*gamma* (C18: 3 ω 6) adalah yang tertinggi di kalangan asid lemak tak tepu, iaitu 36.06 mg (16.23%) dalam setiap gram berat kering sampel. Didapati asid eikosapentaenoik (EPA, C20: 5 ω 3) dan asid dokosahexaenoik (DHA, C22: 6 ω 3) hanya didapati dalam kandungan yang rendah sahaja, iaitu masing-masing 4.62 mg (2.08%) dan 0.67 mg (0.30%) dalam setiap gram sampel kering.