[illegible] OF *Morinda citrifolia* ([illegible]) AND *Centella asiatica* ([illegible])

MOHD [illegible] BIN ISMAIL

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU
2007

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ANTIOXIDATIVE CONSTITUENTS OF *Morinda citrifolia* (MENGKUDU) and *Centella asiatica* (PEGAGA)

By

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Research Report submitted in partial fulfillment of
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **ANTIOXIDATIVE CONSTITUENTS OF *Morinda citrifolia* (MENGKUDU) and *Centella asiatica* (PEGAGA)** oleh **MOHD IFWAT BIN ISMAIL** no. matrik: **UK 10563** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)** , Fakulti Sains dan Teknologi,Universiti Malaysia Terengganu.

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APx	-	ascorbate peroxidase
CAT	-	catalase
cm	-	centimeter
L	-	liter
mg	-	milligram
min	-	minutes
ml	-	milliliter
mM	-	millimolar
nm	-	nanometer
PDT	-	3-(2-pyridyl)-5,6-diphenyl-1,2,3 triazine
POD	-	peroxidase
rpm	-	revolution per minutes
TCA	-	trichloroacetic acid
v/v	-	volume per volume
w/v	-	weight per volume
°C	-	degree Celcius
µg	-	microgram
µl	-	microliter
%	-	percent
UV	-	ultra violet
ROS	-	reactive oxygen species

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ABSTRACT

Morinda citrifolia (mengkudu) and *Centella asiatica* (pegaga) has been used as a traditional medicine and these two herbaceous plants are essential for human uses due to its capability to scavenge the free radicals and can cure harmful diseases. The purpose of this research were to determine and to compare the α-tocopherol, ascorbic acid and carotenoid concentrations as well as catalase, ascorbate peroxidase and guaiacol peroxidase specific activities in the leaf tissues of *Morinda citrifolia* and *Centella asiatica*. Results showed that *Morinda citrifolia* contained significantly higher concentrations of α-tocopherol, ascorbic acid and ascorbate peroxidase specific activities compared to *Centella asiatica*. In contrast, *Centella asiatica* contained significantly higher concentration of guaiacol peroxidase specific activities compared to *Morinda citrifolia*. No significant differences were observed in the concentration of carotenoid and catalase specific activities of *Morinda citrifolia* and *Centella asiatica* leaf tissues. Results revealed that *Morinda citrifolia* and *Centella asiatica* were a good source of natural dietary antioxidants.

KANDUNGAN ANTIOKSIDAN DI DALAM *Morinda citrifolia* (mengkudu) DAN *Centella asiatica* (pegaga).

ABSTRAK

Morinda citrifolia (mengkudu) dan *Centella asiatica* (pegaga) telah digunakan sebagai ubatan tradisional dan kedua-dua tumbuhan herba ini adalah sesuai untuk kegunaan manusia disebabkan keupayaannya untuk menghalang radikal bebas dan mengubati penyakit-penyakit merbahaya. Tujuan kajian ini adalah untuk menentukan kepekatan dan membandingkan kandungan α-tokoferol, asid askorbik dan karotenoid serta aktiviti spesifik enzim katalase, askorbat peroksida dan guaiacol peroksida di dalam tisu daun *Morinda citrifolia* dan *Centella asiatica.* Keputusan menunjukkan bahawa *Morinda citrifolia* mengandungi kepekatan α-tokoferol, asid askorbik dan aktiviti spesifik enzim askorbat peroksida yang lebih tinggi berbanding *Centella asiatica.* Sebaliknya, *Centella asiatica* megandungi kepekatan aktiviti spesifik enzim guaiacol peroksida yang lebih tinggi berbanding *Morinda citrifolia.* Tiada perbezaan yang bererti didapati dalam kepekatan karotenoid dan aktiviti spesifik enzim katalase di dalam tisu daun *Morinda citrifolia* dan *Centella asiatica. Morinda citrifolia* dan *Centella asiatica* merupakan sumber yang baik untuk kandungan diet antioksidan semulajadi.