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elliptica cultures / by Nur Azirah Amzah.

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PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

EFFECT OF MAGNESIUM ON PHENOLIC CONTENT IN *CRYPTOCORYNE*
ELLIPTICA CULTURES

By
Nur Azirah Binti Amzah

A PITA report submitted in partial fulfillment of
the requirements for the award of the degree of
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DEPARTMENT OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
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**JABATAN SAINS BIOLOGI
FAKULTI SAINS DAN TEKNOLOGI
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Effect of Magnesium on Phenolic Content in *Cryptocoryne elliptica* Cultures** oleh **Nur Azirah bt Amzah**, no. matrik: UK18229 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains (Sains Biologi) Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this thesis entitled **EFFECT OF MAGNESIUM ON PHENOLICS IN *CRYPTOCORYNE ELLIPTICA* CULTURES** is the result of my own research except as cited in the references.

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EFFECT OF MAGNESIUM ON PHENOLICS IN *CRYPTOCORYNE ELLIPTICA* CULTURES

ABSTRACT

Magnesium (Mg) is a component of several primary and secondary minerals in the soil. Mg act as a central atom in the chlorophyll molecule and responsible for plant leaf trapping light. Magnesium is also essential in the synthesis of chlorophyll and photosynthesis process. In this study the effect of various Mg concentrations on phenolics compound in *Cryptocoryne elliptica* grown tissue culture was investigated. Two month old of in vitro plantlets were aseptically transferred into modified B5 medium with Mg at 0, 12.2, 24.3, 36.5 and 48.7mM. The plantlets fresh weight, total phenolic, flavonoids and anthocyanin content were measured at every 7 days interval for 8 weeks. *C. elliptica* can survive after 8 weeks of culture under Mg deficient. Excess amount of Mg also not significantly alter the fresh weight of *C. elliptica* plantlets and higher fresh weight was in 24.3 to 48.7mM Mg. The total phenolic, flavonoids and anthocyanin content were increased accordingly with Mg concentration. Culture of *C. elliptica* could growth in broad range of Mg concentration. The present of Mg also contributed to the biosynthesis of phenolics compound in this plant.

KESAN MAGNESIUM TERHADAP KANDUNGAN FENOLIK DALAM KULTUR *CRYPTOCORYNE ELLIPTICA*

ABSTRAK

Magnesium (Mg) merupakan komponen mineral primer dan sekunder yang terdapat di dalam tanah. Mg bertindak sebagai atom pusat dalam molekul klorofil dan bertanggungjawab bagi memerangkap cahaya di daun. Dalam kajian ini, pengaruh berbagai kepekatan Mg terhadap penghasilan sebatian fenolik dalam kultur *Cryptocoryne elliptica* kultur dikaji. In vitro plantlet yang berusia 2 bulan dipindahkan secara aseptik ke media B5 yang telah diubahsuai dengan kepekatan Mg pada 0mM, 12.2mM, 24.3mM, 36.5mM dan 48.7mM. Berat segar, kandungan fenolik, flavonoid dan antosianin diukur pada setiap selang 7 hari selama 8 minggu. *C. elliptica* mampu hidup selepas 8 minggu kultur dalam keadaan kekurangan Mg. Kepekatan Mg yang berlebihan juga tidak menunjukkan perubahan pada berat segar *C. elliptica*. Berat segar yang tertinggi adalah pada 24.3mM ke 48.7mM Mg. Kandungan fenolik, flavonoid dan antosianin meningkat secara langsung dengan kepekatan Mg. Kultur *C. elliptica* mampu untuk tumbuh dalam pelbagai kepekatan Mg. Kehadiran Mg telah mendorong kepada biosintesis sebatian fenolik dalam tumbuhan.