EFFECT OF [illegible] ON *AGLAONEMA* SPECIES IN VITRO CULTURES

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UNIVERSITI MALAYSIA TERENGGANU
2011

Lihat Sebelah

EFFECT OF AMMONIUM ON *AGLAONEMA SIMPLEX* CULTURES

By

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A PITA research 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
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Effect of Ammonium on *Aglaonema simplex* Cultures** oleh **Mohd Ridhwan B Abdullah Asri**, no. matrik: **UK 17208** 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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DECLARATION

I hereby declare that this research report entitled Effect of Ammonium on *Aglaonema simplex* Cultures is the result of my own research except as cited in the references.

Signature : 
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EFFECT OF AMMONIUM ON *AGLAONEMA SIMPLEX* CULTURES

ABSTRACT

Ammonium (NH_4^+) toxicity is an issue of global ecological and economic importance. Under acidic environment, high NH_4^+ concentration can cause toxicity and stress to plants that inhibited the growth. To prevent NH_4^+ toxicity, the plants respond to a strongly increased the antioxidant in reducing reactive oxygen species level. The objective of this study is to determine the effect of ammonium on non-enzymatic antioxidant, phenolics and chlorophyll content in *A. simplex* culture. In this study, the effect of various NH_4^+ concentrations on *A. simplex* culture was investigated for 28 days after cultured in B5 medium with 0, 9.1, 18.2, 27.3, 36.5 or 45.6 mM of NH_4^+ concentration. Plant growth was measured at 7 day interval for four weeks where as the non-enzymatic activities, chlorophyll content, total phenolic content, flavonoid content and flavones were measured at day 1, 3, 7, 14, 21 and 28. The ascorbic acid, carotenoid and flavonoid content were reduced with the increasing of ammonium concentration. The α-tocopherol, chlorophyll, total phenolic content and flavones were increased when NH_4^+ concentration increased. This plant seems to be tolerated in various NH_4^+ concentrations.

KESAN AMMONIUM KE ATAS KULTUR *AGLAONEMA SIMPLEX*

ABSTRAK

Ketoksikan amonium (NH_4^+) merupakan isu kepentingan ekologi dan ekonomi global. Di bawah persekitaran berasid, kepekatan NH_4^+ yang tinggi boleh menyebabkan ketoksidan dan memberi kesan tegangan kepada tumbuhan dan seterusnya membantutkan pertumbuhan. Untuk mengelakkan ketoksidan ammonium, tumbuhan bertindakbalas dengan meningkatkan penghasilan antioksidan untuk mengurangkan tahap spesis oksigen reaktif. Tujuan kajian ini adalah untuk menentukan kesan ammonium ke atas antioksidan bukan enzim, fenolik, dan kandungan klorofil dalam kultur *A. simplex*. Dalam kajian ini, pengaruh kepekatan ammonium yang pelbagai pada *A. simplex* dikaji selama 28 hari selepas dikultur di dalam media B5 dengan kepekatan NH_4^+ pada 0, 9.1, 18.2, 27.3, 36.5 atau 45.6 mM. Pertumbuhan pokok diukur pada selang 7 hari selama empat minggu sementara aktiviti bukan-enzima, kandungan klorofil, kandungan jumlah fenolik, kadar flavonoid dan flavon diukur pada hari ke 1, 3, 7, 14, 21 dan 28. *A. simplex* boleh tumbuh dengan baik pada kepekatan NH_4^+ yang tinggi. Kepekatan NH_4^+ yang tinggi mengurangkan kandungan asid askorbik, karotenoid, dan flavonoid. Kandungan α-tokoferol, klorofil, total fenolik dan flavon meningkat apabila kepekatan amonium meningkat. *Aglaonema simplex* didapati boleh bertoleransi dalam pelbagai kepekatan NH_4^+.