THE XANTHOSINASE INHIBITOR ACTIVITY OF ETHANOL-EXTRACT OF *AGLAONEMA SIMONSII* CUTLER

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2012

Lihat Sebelah

THE GLUCOSIDASE INHIBITOR ACTIVITY OF ETHANOL-EXTRACT OF *AGLAONEMA SIMPLEX* CULTURE

By
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A PITA report submitted in partial fulfillment of
the requirements for the award of the degree of
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **The Glucosidase Inhibitor Activity of Ethanol-Extract of *Aglaonema simplex* Culture** oleh **Nurul Ain Binti Zainon**, no. matrik: **UK20388** 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 Final Year Project research report entitled The Glucosidase Inhibitor Activity of Ethanol-Extract of *Aglaonema simplex* Culture is my own research except as cited in the references.

Signature :
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The Glucosidase Inhibitor Activity of Ethanol-Extract of *Aglaonema simplex* Culture

ABSTRACT

The incidences of metabolic disorders such as diabetes mellitus are increasing. One of the therapeutic approaches for this disorder is by reducing the α-glucosidase activity. In the study, the potential of *Aglaonema simplex* as therapeutic agent especially as glucosidase inhibitor due it polyhydroxylalkaloids was investigated. The in vitro plantlets of *A.simplex* were cultured in Murashige and Skoog medium for three and four months. The ethanolic extracts obtained were assayed for α-glucosidase inhibition activity. Results showed that stem and root extracts exhibited the high inhibition activity with IC_{50} 4.5 and 3.9 mg/ml respectively at three months culture, 4.1 and 3.2 mg/ml respectively at four months culture. Roots at four months age of culture showed the most effective inhibitor with lowest IC_{50} value, 3.2 mg/ml. The Lineweaver-Burk plots revealed that the inhibition activity of leave extracts was uncompetitive type, stems and roots were non-competitive. Km values for stem and root extracts at three and four months were remaining constant, 5.0 mM while Vmax for these parts were changes. Vmax of stem and root extracts were 0.5 and 0.4 $mM.min^{-1}$ respectively at three months, 0.4 and 0.3 $mM.min^{-1}$ respectively at four months culture.

Perencatan Oleh Kultur *Aglaonema simplex* Yang Diekstrak Menggunakan Etanol Terhadap Aktiviti Glikosida

ABSTRAK

Kejadian gangguan metabolik seperti diabetes melitus semakin meningkat. Salah satu pendekatan terapeutik yang dilakukan untuk menangani masalah adalah dengan mengurangkan aktiviti α-glukosida. Dalam kajian, potensi *Aglaonema simplex* sebgai agen terapeutik terutama sebagai perencat glukosida disebabkan kandungan polihidrosilalkaloids telah dikaji. *A.simplex* dikultur di dalam Murashige dan Skoog media selama tiga dan empat bulan. Aktiviti perencatan diuji menggunakan sampel yang diekstrak menggunakan etanol. Hasil kajian menunjukkan bahawa ekstrak batang dan akar pokok menunjukkan aktiviti perencatan yang tinggi dengan IC_{50} 4.5 dan 3.9 mg/ml bagi kultur tiga bulan serta 4.1 dan 3.2 mg/ml bagi kultur empat bulan. Bahagian akar yang dikultur selama empat bulan menunjukkan aktiviti perencatan yang paling efektik berdasarkan nilai IC_{50} bahagian tersebut yang paling rendah iaitu 3.2 mg/ml . Plot Lineweaver-Burk menunjukkan bahawa ekstrak daun adalah perencat tidak kompetitif manakala ekstrak batang dan akar adalah non-kompetitif. Nilai Km bagi ekstrak batang dan akar yang dikultur selama tiga dan empat bulan adalah tidak berubah, 5.0 mM manakala Vmax bagi ektrak bahagian-bahagian tersebut adalah berubah. Vmax bagi ekstrak batang dan akar ialah 0.5 dan 0.4 $mM.min^{-1}$ untuk kultur tiga bulan, 0.4 dan 0.3 $mM.min^{-1}$ untuk kultur empat bulan.