

THE ANTIOXIDANT EFFECT OF CRUDE EXTRACT OF
SPONGES ON OXYGENIC FREE-LIVING AMOEBA

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THE CYTOTOXIC EFFECT OF CRUDE EXTRACT OF SPONGES ON
PATHOGENIC FREE-LIVING AMOEBA

By

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**PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: THE CYTOTOXIC EFFECT OF CRUDE EXTRACT OF SPONGES ON PATHOGENIC FREE-LIVING AMOEBIA oleh Rosyida Binti Rosdi, no. matrik: UK 8637 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, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATIONS

AC	<i>Acanthamoeba castellanii</i>
AOPI	Acridine Orange –Propidium Iodide
<i>et al.</i>	And others (in Latin)
°C	Degree Celsius
i.e.	Example
g	Gram
IC	Inhibition concentration
L	Litre
µg	Micro gram
µL	Microlitre
mL	Millilitre
nm	Nanometre
ppm	Part per million
%	Percentage

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THE CYTOTOXIC EFFECT OF CRUDE EXTRACT OF SPONGES ON PATHOGENIC FREE-LIVING AMOEBAS

ABSTRACT

Sponges have become one of the prominent sources to produce natural products treating various diseases. Protozoan from genus *Acanthamoebae* have been clinically proved causing infection in human. Cytotoxic assay was performed in order to determine the effect of selected extracts sponges (*Xestospongia sp.*) which are coding with B01/007 and K03/001 onto pathogenic free-living *Acanthamoeba castellanii* and *Acanthamoeba* (P1). In this research, result indicates that crude extracts of *Xestospongia* (B01/007 and K03/001) are potential causing cytotoxic effect resulted leakage of the cell membrane on *Acanthamoeba castellanii* at the high concentration. The extract coding B01/007 showed the cytotoxic effect at concentration of 270µg/mL and extract coding K03/001 was at 500µg/mL. From both extracts of *Xestospongia*, the B01/007 extract have more potent anti-Acanthamoebic activity. But, the IC₅₀ concentration may vary due to the limiting factor from the cells themselves and from the compound that built the extract of *Xestospongia*.

KESAN CYTOTOXIC CRUDE EKSTRAK SPONGES TERHADAP AMOEBIA HIDUP BEBAS YANG PATHOGENIK

ABSTRAK

Sponges menjadi sumber yang digunakan secara meluas dalam menghasilkan produk semulajadi bagi merawat pelbagai jenis penyakit. Organisma kumpulan Protozoa dari genus *Acanthamoeba* telah terbukti secara klinikal menyebabkan jangkitan serius kepada manusia. Satu ujikaji cytotoxic telah dijalankan untuk menentukan kesan crude ekstrak sponges (*Xestospongia sp.*) yang telah dikodkan sebagai B01/007 dan K03/001 ke atas *Acanthamoeba castellanii* dan juga *Acanthamoeba* (P1) hidup bebas yang mempunyai gen pathogenik. Data kajian ini menunjukkan bahawa crude ekstrak *Xestospongia* (B01/007 dan K03/001) berpotensi menyebabkan kesan cytotoxic yang telah menyebabkan kebocoran pada membran sel *Acanthamoeba castellanii* pada kepekatan yang tinggi. Ekstrak berkod B01/007 menunjukkan kesan cytotoxic pada kepekatan 270µg/mL manakala ekstrak berkod K03/001 memberi kesan cytotoxic pada kepekatan 500µg/mL. Ekstrak B01/007 mempunyai anti-*Acanthamoebic* aktiviti yang lebih tinggi berbanding ekstrak K03/001. Nilai kepekatan ini adalah tidak tetap kerana banyak faktor penghad yang disumbangkan oleh sel dan juga campuran serta sebatian yang ada pada ekstrak *Xestospongia*.