THE ALLELOPATHIC ACTIVITY OF *STRIGA ASIATICA* EXTRACT ON *CHLORELLA VULGARIS* (*UMT-M1*)

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FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU
2013

Lihat Sebelah

THE ALLELOPATHIC ACTIVITY OF *STRIGA ASIATICA* EXTRACT ON *CHLORELLA VULGARIS (UMT-M1)*

by

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PENGAKUAN DAN PENGESAHAN LAPORAN BIO 4999

Adalah ini diakui dan disahkan bahawa laporan PITA bertajuk: Kesan Alelopati Ekstrak *Striga asiatica* terhadap *Chlorella vulgaris (UMT-M1)*, no matrik: UK23256 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 PITA research entitled The Allelopathic Activity of *Striga asiatica* Extract on *Chlorella vulgaris (UMT-M1)* is the result of my own research except as cited in the references.

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THE ALLELOPATHIC ACTIVITY OF *STRIGA ASIATICA* EXTRACT ON *CHLORELLA VULGARIS (UMT-M1)*

ABSTRACT

Allelopathy is a common occurrence in plants and affects the growth of the reacting species either positive (stimulating) or negative (inhibiting). Allelopathic activity has been in many plant interactions such as weed on crops, crops on weeds and crops on crops. Weed allelopathy is important for the future agronomic applications especially in crops production. *Striga asiatica* has been known as the invasive weed species that inhibit the growth of important crops. The present study examined the allelopathic activity of *Striga asiatica* on microalgae *Chlorella vulgaris (UMT-M1)*. Crude and supernatant extract of *S. asiatica* at two, four and six weeks of culture were tested using the algal plating assay with disc diffusion and agar well diffusion method. Results showed that crude extract of *S. asiatica* with agar well method causes positive allelopathic activity on the growth of *Chlorella vulgaris (UMT-M1)* with formation of dense green zone around the agar well. The highest extract concentration, 50 mg/ml exhibited the highest stimulating allelopathic activity on the growth of *Chlorella vulgaris (UMT-M1)* by showing the widest stimulating zone radius. The four weeks old of *S. asitaca* culture also contributed highest allelopathic activity with significance level at $P<0.05$. Allelopathic activity is dependent on the age of plantlets and concentration used on the microalgae.

KESAN ALELOPATI EKSTRAK *STRIGA ASIATICA* TERHADAP *CHLORELLA VULGARIS (UMT-M1)*

ABSTRAK

Alelopati adalah kejadian yang biasa berlaku pada tumbuhan dan memberi kesan kepada pertumbuhan spesies yang bertindak balas sama ada positif (merangsang) atau negatif (menghalang). Aktiviti alelopati telah interaksi tumbuhan banyak seperti rumpai terhadap tanaman, tanaman terhadap rumpai, dan tanaman terhadap tanaman. Alelopati rumpai adalah penting untuk aplikasi masa depan pertanian terutama dalam pengeluaran tanaman. *Striga asiatica* telah dikenali sebagai spesies rumpai invasif yang menghalang pertumbuhan tanaman penting. Kajian ini meneliti aktiviti alelopati *Striga asiatica* pada mikroalga *Chlorella vulgaris (UMT-M1).* Ekstrak mentah dan supernatan *S. asiatica* yang dikultur selama dua, empat dan enam minggu telah diuji menggunakan kaedah penyaduran alga dengan serapan cakera dan kaedah serapan lubang agar. Keputusan menunjukkan bahawa ekstrak mentah *S. asiatica* dengan kaedah serapan lubang agar menyebabkan aktiviti alelopati positif terhadap pertumbuhan *C. vulgaris (UMT-M1)* dengan pembentukan zon hijau yang padat di sekitar lubang agar. Ekstrak dengan larutan tertinggi, 50 mg/ml dipamerkan merangsang aktiviti alelopati tertinggi terhadap pertumbuhan *C. vulgaris (UMT-M1)* dengan menunjukkan jejari zon ransangan paling lebar. *S. asiatica* berusia empat minggu juga menyumbang aktiviti alelopati tertinggi dengan tahap signifikan pada $P<0.05$. Aktiviti alelopati adalah bergantung kepada umur anak pokok dan kepekatan yang digunakan terhadap mikroalga tersebut.