DETECTION OF ANTIBACTERIAL COMPOUNDS IN FUNGI ISOLATED FROM *ACROSTICHUM AUREUM*

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DETECTION OF ANTIBACTERIAL COMPOUNDS IN FUNGI ISOLATED FROM *ACROSTICHUM AUREUM*

By
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DECLARATION

I hereby declare that this thesis entitled **Detection of Antibacterial Compounds in Fungi Isolated from *Acrostichum aureum*** is the result of my own research except as cited in the references.

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ABSTRACT

Fungi associated with mangroves have been proven to be one of the rich sources of bioactive compounds. In this study, the antibacterial activity of fungi isolated from *Acrostichum aureum* was investigated. In order to confirm the identification of fungi, slide culture technique was used and three fungi have been identified. The fungal extracts of *T. viride*, *Massarina* sp., and *C. lunata* were screened for antibacterial activities against five bacterial test strains: *Pseudomonas* sp., *Salmonella* sp., *E. coli*, *Klebsiella* sp. and *Streptococcus agalactiae* using the agar well diffusion method. The zones of inhibition produced by the extracts of *T. viride*, *Massarina* sp., and *C. lunata* against the test strains were between 8-19, 7-30 and 10-30 mm, respectively. The fungal extract of *T.viride* was more effective against the bacterial test strains than the other two species, with moderate activity. *Massarina* sp. showed possible inhibition zone against *E. coli* and *Klebsiella* sp. while *C. lunata* showed possible inhibition against *E. coli*, *Salmonella* sp., and *Pseudomonas* sp. It is therefore possible that *T. viride*, *Massarina* sp., and *C. lunata* contain antimicrobial compounds. However, the efficacy of all fungal extracts towards the bacterial test strains cannot be determined as yet, when compared to the standard antimicrobial agent ampicillin since they are still impure extracts. Thin layer chromatography has also been carried out to observe the compounds in the fungal extracts but the compounds were not fully separated which maybe due to the unsuitability of the running solvent mixture. Further study is recommended to identify the antimicrobial compounds in those fungi.

PENGESANAN SEBATIAN ANTIBAKTERIA DALAM FUNGI YANG DIPENCIL DARIPADA *ACROSTICHUM AUREUM*

ABSTRAK

Fungi yang terdapat di pokok bakau adalah terbukti kaya dengan kandungan bahan bioaktif. Dalam kajian ini, aktiviti antibakteria dalam fungi yang telah dipencil dari *Acrostichum aureum* telah dikaji. Bagi mengesahkan identifikasi fungi, teknik 'Slide culture' digunakan dan tiga fungi telah dikenal pasti. Ekstrak fungi daripada *T. viride*, *Massarina* sp., dan *C. lunata* telah di uji untuk mengesan aktiviti antibakteria melawan lima bakteria ujian: *Pseudomonas* sp., *Salmonella* sp., *E. coli*, *Klebsiella* sp. dan *Streptococcus agalactiae* dengan menggunakan teknik 'agar-well diffusion'. Ekstrak *T. viride*, *Massarina* sp., dan *C. lunata* telah menghalang pertumbuhan bakteria dengan menghasilkan zon perencatan di antara 8-19, 7-30 dan 10-30 mm, masing-masing ekstrak fungi daripada *T. viride* adalah lebih efektif melawan bakteria berbanding spesis yang lain dengan menghasilkan aktiviti antibakteria yang sederhana. *Massarina* sp. pula menunjukkan kemungkinan zon perencatan terhadap *E. coli* dan *Klebsiella* sp. Manakala *C. lunata* menunjukkan kemungkinan zon perencatan terhadap *E. coli*, *Salmonella* sp., dan *Pseudomonas* sp. Jadi, *T. viride*, *Massarina* sp., dan *C. lunata* berkemungkinan mengandungi sebatian antimikrobial. Walau bagaimanapun, kekuatan semua ekstrak fungi melawan bakteria tidak dapat ditentukan lagi jika dibandingkan dengan agen antimikrobial yang piawai iaitu ampicillin disebabkan ekstrak yang tidak tulen. Teknik 'Thin Layer Chromatography' juga dilakukan untuk memerhatikan sebatian yang terdapat dalam ekstrak fungi tetapi sebatian tidak terpisah sepenuhnya yang mana mungkin disebabkan campuran pelarut yang tidak sesuai. Kajian selanjutnya adalah dicadangkan untuk mengenalpasti sebatian antimikrobial dalam fungi tersebut.