ANTI-X BREAST BACTERIAL ACTIVITY OF *Cryptocoryne ciliata* CULTURES

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2017

ANTI *VIBRIO* BACTERIA ACTIVITY OF *Cryptocoryne ciliata* CULTURES

By

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Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Science (Biological Sciences)

Department of Biological Sciences
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UNIVERSITI MALAYSIA TERENGGANU
2007

This project should be cited as:

Cynthia, S. 2007. Anti *Vibrio* bacteria activity of *Cryptocoryne ciliata* cultures. Undergraduate thesis, Bachelor of Science in Biological Sciences, Faculty of Science and Technology, Universiti Malaysia Terengganu, Terengganu. 56p.

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AKNOWLEDGEMENT

First of all thanks be to God for his mercy I am able to complete this project. I particularly grateful to Dr. Aziz Ahmad, my project supervisor, who is devoted his time and effort to guide and advised me throughout my project. I also dedicate my special appreciation to Dr. Najiah Musa, my co-supervisor, who undoubtfully donates the bacteria that being used in this project and her willingness to give guidance and advice throughout my project.

This special thanks also goes to our laboratory assistant, Mr. Mazrul, Mdm. Zarina and Mdm Fatimah for their cooperation and knowledge during my laboratory work. And also not forget to Biological Department of Science Officer Miss Norazlina Abd. Aziz.

I wish to extend my appreciation to the person who has directly or indirectly guiding me throughout the project, especially post graduate students.

Special thanks to my family for their support, encouragement and patience.

Finally, but most importantly, I would like to thank my friends for their cooperation and support to me not only for this project, but also their support and encouragement throughout my studies. I must admit without their help I will unable to complete this report in flying colors.

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LIST OF ABBREVIATIONS/SYMBOLS

BAP	6-Benxylaminapurine
DMSO	Dimethyl sulfoxide
MHA	Mueller Hinton agar
TSB	Tryptic soy broth
TSA	Tryptic soy agar
TCBS	Thiosulphate citrate bile salt sucrose
L	Liter
ml	Milliliter
µl	Microliter
mm	Millimeter
nm	Nanometer
g	Gram
mg	Milligram
µm	Microgram
mg/L	Milligram per liter
mg/ml	Milligram per milliliter
°C	Degree Celsius
$CFUmL^{-1}$	Colony forming units per milliliter
%	Percentage

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ABSTRACT

Cryptocoryne ciliata is the aquatic plant that easy to propagate *in vitro,* but no report on its medicine value. Thus, the objectives of this study were to determine the anti *Vibrio* bacteria activity and MIC (minimal inhibitory concentration) of extract for antibacterial activity and also to determine the age of plant with highest antibacterial activity. The anti-*Vibrio* bacteria activity of methanol and aqueous extract of *Cryptocoryne ciliata* cultures were investigated. The *in vitro* plantlet was established and proliferate on the MS media added with 3mg/l BAP for 30, 50 and 70 days of cultivation time. The evaluation of antibacterial activity was done by using Kirby-Bauer method. The methanol extract of cultured plants have antibacterial against *V. alginolyticus* and *V. vulnificus* with the diameter in range of 6mm to 9mm, but no antibacterial activity when tested against *V. parahaemolyticus.* The aqueous extracts have no antibacterial activity against three tested bacteria. Among the three cultivation time, 70-days have the highest inhibition zone following by 50 days and 30 days the lowest inhibition zone. These observations indicate of that the longer cultivation time gave higher antibacterial activity. Therefore, the longer cultivation time could increase the yield of plant secondary metabolites that contained antibacterial constituents. Further study should be carried out to obtain the compound responsible for the antibacterial activity.

ANTI-*VIBRIO* BAKTERIA AKTIVITI BAGI KULTUR *Cryptocoryne ciliata*

ABSTRAK

Cryptocoryne ciliata adalah tumbuhan akuatik yang mudah ditumbuhkan secara *in vitro*, tetapi tiada laporan tetang nilai perubatannya. Oleh itu, objektif kajian ini adalah mengenalpasti anti *Vibrio* bateria aktiviti serta minimum kepekatan perencat dan juga mengenalpasti umur tumbuhan yang mempunyai anti *Vibrio* bacteria yang tinggi. Anti *Vibrio* bakteria aktiviti bagi ekstrak methanol dan air telah dilakukan terhadap tumbuhan kultur *Cryptocoryne ciliata.* Tumbuhan ini ditumbuhkan secara *in vitro* pada media MS ditambah 3mg/l BAP bagi 30, 50 dan 70 hari pengkulturan. Pentaksiran antibakteria telah dijalankan dengan menggunakan kaedah Kirby-Bauer. Esktrak metanol menunjukkan antibakteria aktiviti terhadap *V. alginolyticus* dan *V. vulnificus* dengan julat diameter zon perencat diantara 6mm kepada 9mm, dan tiada antibakteria aktiviti terhadap *V. parahaemolyticus.* Ekstrak air tiada kesan antibakteria aktiviti terhadap kesmua bakteria yang diuji. Ekstrak metanol 70 hari menunjukkan antibakteria yang tinggi berbanding 50 hari diikuti 30 hari pengkulturan. Keputusan ini menunjukkan tempoh pengkulturan yang panjang memberikan kesan antibakteria yang tinggi. Oleh itu, tempoh pengkulturan yang panjang dapat meningkatkan hasil metabolik sekunder tumbuhan yang mempunyai sebatian antibakteria. Kajian selanjutnya harus dilakukan untuk memperolehi sebatian yang mempunyai antibakteria aktiviti.