

A STUDY ON POTENTIAL APPLICATION FOR  
ANTIBACTERIAL, ANTIBIOFILM AND ANTIOXIDANT FROM  
TISSUES OF SEA CUCUMBER (*Stichopus horrens*)

NOOR FATIN BINTI OSMAN @ LATIF

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A study on potential application for antibacterial, antibiofilm  
and antioxidant from tissues of sea Cucumber (stichopus  
horrens) / by Noor Fatin Osman @ Latif.

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Lihat Sebelah

**A Study on Potential Application for Antibacterial, Antibiofilm and Antioxidant  
from Tissues of Sea Cucumber (*Stichopus horrens*)**

**By**

**Noor Fatin Binti Osman @ Latif**

**Research Report submitted in partial fulfillment of  
the requirements for the degree of  
Bachelor of Science (Marine Biology)**

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SCHOOL OF MARINE SCIENCE AND ENVIRONMENT  
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**DECLARATION AND VERIFICATION REPORT**  
**FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled A Study on Potential Application for Antibacterial, Antibiofilm and Antioxidant from Tissues of Sea Cucumber (*Stichopus horrens*) by Noor Fatin Binti Osman @ Latif. Matric No. UK26282 have been examined and all errors identified have been corrected. This report is submitted to the School of Marine Science and Environment as partial fulfillment towards obtaining the Degree of Marine Biology School of Marine Science and Environment, Universiti Malaysia Terengganu.

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## LIST OF ABBREVIATIONS

|                |   |                                    |
|----------------|---|------------------------------------|
| °C             | = | Degree Celsius                     |
| A <sub>0</sub> | = | Absorbance of Blank                |
| A <sub>1</sub> | = | Absorbance of Sample               |
| DPPH           | = | 2, 2- Diphenyl- 1- picryl hydrazyl |
| M <sub>1</sub> | = | Molar                              |
| mg             | = | Milligram                          |
| MH             | = | Muller Hinton                      |
| mL             | = | millilitre                         |
| mm             | = | millimetre                         |
| NB             | = | Nutrient Broth                     |
| nm             | = | Nanometer                          |
| OD             | = | Optical Density                    |
| V <sub>1</sub> | = | Volume                             |
| μL             | = | Microlitre                         |

## ABSTRACT

Crude extract of *Stichopus horrens*'s tissues that were collected from Bidong Island, Terengganu were evaluated for their antibacterial, antibiofilm and antioxidant. At the lower concentration of extraction from *S. horrens*'s tissue (0.234 mg/ml), the sample showed negative value in percentage inhibition which is -13.797 %. This indicate that the extraction of tissue from *S. horrens* do not possess antibiofilm activity at lower concentration. When increasing the concentration of sample, the percentage inhibitions also increase up to 49.456 %. However, the continued increasing the concentration of sample, the percentage inhibition are started to decrease to -15.544 %. There is no antibacterial activity detected in the *S. horrens* which is indicating by no inhibition zones were measured against eight types of bacteria tested. Only the controls which are ampicilin (gram-positive) and gentamycin (gram-negative) show the inhibition zone in all the types of bacteria used. For the determination of the antioxidant activity, the crude extract do not showed antioxidant activity compared to the control (Queurcetin). The value for percentage of antioxidant for *S. horrens* are from -0.893 % until 1.488 % which are less than antioxidant activity that are possess by Queurcetin which is > 82 %.

**KAJIAN MENGENALPASTI POTENSI KEUPAYAAN UNTUK  
ANTIBAKTERIA, ANTIBIOFILM DAN ANTIOKSIDAN DARIPADA TISU  
GAMAT (*Stichopus Horrens*)**

**ABSTRAK**

Ekstrak yang dihasilkan daripada tisu *S. horrens* yang didapati di Pulau Bidong, Terengganu telah dijalankan kajian untuk menentukan aktiviti bagi antibiofilm, antibacterial dan antioksidan. Pada kepekatan pengekstrakan tisu *S. Horrens* yang rendah (0.234 mg/ml), sampel menunjukkan nilai negatif dalam peratusan perencatan iaitu -13.797%. Ini menunjukkan bahawa pengekstrakan tisu daripada *S. horrens* tidak mempunyai aktiviti antibiofilm pada kepekatan yang lebih rendah. Apabila pada kepekatan sampel yang tinggi, peratusan perencatan juga meningkat sehingga 49.456%. Walau bagaimanapun, peningkatan berterusan pada kepekatan sampel, perencatan peratusan akan mula menurun kepada -15.544%. Tidak ada sebarang aktiviti anti-bakteria yang dikesan dalam *S. horrens* yang mana zon perencatan yang diukur tidak mempunyai nilai terhadap lapan jenis bakteria yang diuji. Hanya kawalan iaitu Ampicilin (gram-positif) dan gentamycin (gram-negatif) yang menunjukkan zon perencatan dalam semua jenis bakteria yang digunakan. Bagi penentuan aktiviti antioksidan, sampel tidak menunjukkan sebarang aktiviti pengoksidaan berbanding dengan kawalan (Quercetin). Nilai peratusan perencatan untuk *S. horrens* dari -0.893% sehingga 1.488% yang mana nilai ini rendah jika dibandingkan aktiviti pengoksidaan yang dimiliki oleh Quercetin > 82%.