

ANTICANCER ACTIVITY OF ACTINOMYCETES ISOLATED
FROM BIDONG ISLAND, TERENGGANU AGAINST MCF-7
CELL LINE

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SCHOOL OF MARINE SCIENCE AND ENVIRONMENT
UNIVERSITI MALAYSIA TERENGGANU

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**ANTICANCER ACTIVITY OF ACTINOMYCETES ISOLATED FROM BIDONG
ISLAND, TERENGGANU AGAINST MCF-7 CELL LINE**

By

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DECLARATION AND VERIFICATION REPORT
FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled Anticancer Activity of Actinomycetes Isolated From Bidong Island, Terengganu Against Mcf-7 Cell Line by Nurul Balqis Binti Mohd Mansor, Matric No., UK 25062 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 Bachelor of Science (Marine Biology) School of Marine Science and Environment, Universiti Malaysia Terengganu.

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LIST OF ABBREVIATIONS

%	-	percent
°C	-	degree celcius
Cm	-	centimeter
L	-	Liter
Min	-	minute
N	-	Normality
μL	-	micro liter
U/L	-	Units per Liter
μg/mL	-	microgram per milliliter
mg/mL	-	milligram per milliliter

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ABSTRACT

Actinomycetes are known to produce chemically varied compounds with a broad range of biological activity. In this project, nine actinomycetes that have been isolated from Bidong island marine sediment but two potential actinomycetes as anticancer were identified as *Streptomyces* sp. and *Nocardia* sp which are A6 and A9 respectively. Potato Dextrose Agar (PDA) and Casein Starch Agar (CSA) were used as culture and isolation media. From cytotoxic test, they showed IC_{50} value while the rest does not show IC_{50} due to their reading were below 50 percent of cytotoxic index. That showed that actinomycetes strains number A1, A2, A3, A4, A5, A7 and A8 have low inhibition activity against MCF-7 cell line. They showed value greater than 100 $\mu\text{g/mL}$. Their sample concentration have to be increased a lot to reach IC_{50} . A6 showed the highest cytotoxic followed by A9. A6 showed IC_{50} value (1.5 mg/mL) followed by A9 (5.3 mg/mL) at 24 hour test. For identification, actinomycetes strain no A6 and A9 (which are showed active anticancer activity) were identified through morphological characteristics due unobtainable PCR product. They were moderately active to inhibit cancer.

**AKTIVITI ANTIKANSER DARIPADA AKTINOMASIT YANG TELAH DI
ASINGKAN DARIPADA PULAU BIDONG, TERENGGANU TERHADAP SEL
MCF-7**

ABSTRAK

Aktinomaisit dikenali sebagai penghasil pelbagai sebatian kimia dengan kepelbagaian aktiviti biologi. Dalam projek ini, sembilan aktinomaisit yang telah dikultur dan diasingkan dan dua daripadanya menunjukkan aktiviti antikanser yang aktif telah dikenalpasti sebagai *Streptomyces* sp. dan *Nocardia* sp iaitu masing-masing adalah A6 dan A9 . Agar dekstros kentang (PDA) dan agar kanji casein (CSA) telah digunakan sebagai media untuk mengkultur dan mengasingkan aktinomaisit. Daripada kajian ketoksikan terhadap sel, mereka menunjukkan IC₅₀ value manakala strain yang lain tidak menunjukkan nilai melebihi 50 peratus ketoksikan terhadap sel. Hal ini menunjukkan strain aktinomaisit bernombor A1, A2, A3, A4, A5, A7 dan A8 mempunyai aktiviti menghalang sel MCF-7. Mereka menunjukkan nilai melebihi 100 µg/mL. kepekatan sampel mereka harus di pertingkatkan dengan banyak untuk mencapai IC₅₀. A6 menunjukkan ketoksikan terhadap sel yang tinggi diikuti A9. A6 menunjukkan nilai IC₅₀ (1.5 mg/mL) diikuti dengan A9 (5.3 mg/mL) pada 24 jam ujian. Untuk pengenalpastian identity sampel aktinomaisit bernombor A6 dan A9 (yang mana menunjukkan antikanser yang aktif) dilakukan melalui ciri-ciri morfologi kerana tidak dapat penjujukan DNA kerana tiada produk PCR.