

PRELIMINARY EFFECTS OF CRUDE COMPOUND ISOLATED
FROM SEAHORSE ON CANCER CELL LINES

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PROJEK PENYELIDIKAN I DAN II
RESEARCH REPORT VERIFICATION**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **PRELIMINARY EFFECTS OF CRUDE COMPOUND ISOLATED FROM SEAHORSE ON CANCER CELL LINES** oleh **KHANITTHA SUWANNO**, no. matrik: **UK12636** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**., Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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**“Try to put well in practice what you already know.
In so doing, you will, in good time, discover the hidden
things you now inquire about.”**

Remy de Gourmont quotes

(French novelist, poet, playwright, and philosopher, 1858-1915)

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LIST OF ABBREVIATION

TCM	Traditional Chinese Medicine
FBS	Fetal Bovine Serum
PBS	Phosphate Buffering Solution pH 7.4
MTT	3(4,5-dimethylthiazolyl-2)-2,5-diphenyl tetrazolium bromide
DMSO	Dimethyl sulfoxide
°C	Degree Celsius
g	Gram
L	Liter
mg	Microgram
μl	Microliter
mg/ul	Microgram per microliter
nm	Nanometer

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ABSTRACT

According to Traditional Chinese Medicine (TCM), seahorse (*Hippocampus* sp.) has been used to treat various diseases. It is believed that certain compounds from the seahorse have the potentiality to be developed into novel pharmaceutical drugs. To accomplish this assumption, a study was conducted whereby the crude extracts from male and female seahorse were tested against MCF-7 (human breast carcinoma) cancer cell line for cytotoxic activity. The selected male and female seahorses were dried, grinded, before being soaked in methanol. After a period of 5 to 12 days, methanol which contains all the bioactive compounds was separated from the grinded seahorse residue with a filter system. To further purified the crude extract, a rotary evaporator was used at a reduced pressure of 250 atm at 30 °C. The 3(4,5-dimethylthiazolyl-2)-2,5-diphenyl tetrazolium bromide assay (MTT assay) was conducted by exposing the confluent and healthy MCF-7 cancer cell with three-fold male and female seahorse crude extracts. Physical observation on both crude shows that the male crude extracts contain oilier substances compare to female. Cytotoxic assay demonstrates proliferation of cell has occurred at both male and female samples and not cancer cell death as reported from those who practice TCM. Crude from male seahorse enhance the cell to proliferate better than the female ($P < 0.05$). As a conclusion, crude extract from seahorse shows a positive role in enhancing growth of cells. This can be used as a novel agent in promoting cell growth especially in wound healing study.

Kajian kesan pati ekstrak daripada kuda laut terhadap kanser sel

ABSTRAK

Menurut kaedah perubatan tradisional cina, kuda laut (*Hippocampus* sp.) telah banyak digunakan untuk mengubati pelbagai jenis penyakit. Ia dipercayai bahawa beberapa unsur yg tertentu daripada kuda laut mempunyai kebolehan untuk dimajukan menjadi ubat farmasi. Untuk menyempurnakan dan membuktikan terhadap sangkaan ini, suatu kajian telah dijalankan dimana pati yang diekstrak daripada kuda laut betina dan jantan diuji terhadap sel kanser MCF-7 (human breast carcinoma) untuk mengesan aktiviti cytotoxic. Kuda laut jantan dan betina dikeringkan, dihancurkan sebelum direndam dalam methanol secara berasingan. Selepas tempoh 5 hingga 12 hari, methanol yang mengandungi semua unsur-unsur yang telah terlarut ditapis daripada sisa kuda laut. Selanjutnya, mesin rotary evaporator telah digunakan dengan tekanan 250atm dan pada suhu 30 °C untuk mengekstrak pati kuda laut. Ujian 3(4,5-dimethylthiazolyl-2)-2,5-diphenyl tetrazolium bromide (MTT assay) dijalankan dengan mendedahkan sel kanser MCF-7 yang sihat dengan pati ekstrak kuda laut jantan dan betina yang telah dicairkan dengan pencairan tiga ganda. Pemerhatian fizikal pada kedua-dua pati menunjukkan ekstrak pati daripada kuda laut jantan mengandungi unsur yang lebih berminyak berbanding dengan pati kuda laut betina. Ujian cytotoxic menunjukkan penggandaan sel telah berlaku pada kedua-dua sampel kuda laut jantan dan betina dan tiada sel kanser yang mati seperti yang dilaporkan oleh pihak yang mengamalkan TCM tersebut. Pati daripada kuda laut jantan menolong penggandaan sel yang lebih baik daripada pati kuda laut betina ($P < 0.05$). Kesimpulannya, ekstrak pati daripada kuda laut menunjukkan ia memainkan peranan sebagai penggandaan sel yang baik. Oleh itu, ia mungkin boleh digunakan sebagai ejen dalam mempromosikan pertumbuhan sel terutamanya dalam kajian penyembuhan luka.