UNIVERSITI TEKNOLOGI MARA

IN VITRO CYTOTOXICITY OF HONEY ON WRL-68 NORMAL LIVER CELLS BY USING MTT ASSAY

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Project submitted in fulfillment of the requirements for
the degree of
Bachelor in Medical Laboratory Technology
(Hons.)

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DECLARATION BY STUDENT

Project entitled “In Vitro Cytotoxicity of Honey on WRL-68 Normal Liver Cells by Using MTT assay” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, En. Norhisham Bin Haron. It has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirement for the Degree of Bachelor in Medical Laboratory Technology (Hons).

Student’s signature:

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In the name of Allah, The Most Gracious, The Most Merciful.

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ABSTRACT

Honey is a natural product that produced by bees and has been used for centuries as a food sources, medicine and daily supplement. The consumption of real honey is important to prevent the side effects and allergic reactions. This study was conducted to determine the cytotoxicity effect of Acacia, Tualang and Gelam honey onto the WRL-68 normal liver cells, in different dose and time of incubation. The cells were treated with various concentrations ranging from 0.098% to 100% of selected honeys and further incubated for 24 hours to obtain the IC_{50} value and significant toxic dose for each honey. The cytotoxic effect of selected honeys were analyzed by MTT assay and Graph Pad Prism version 8.1.1. Using the obtained toxic dose, the whole procedure was then repeated with different incubation periods of 48 and 72 hours. The cytotoxic effect increased when treated with Acacia, Tualang and Gelam honey in dose dependent manner. After 24 hours, the significant toxic concentration for Acacia and Tualang honey were 12.5%, while for Gelam honey was 25%. The IC_{50} values for Acacia, Tualang and Gelam honey after 24 hours incubation were 8.164%, 8.204% and 17.20%, respectively. WRL-68 cells viability was affected by different incubation times of honey treatment. The percentage of viable cells after treated with 12.5% Acacia honey were 45.67 ± 3.84%, 32.67 ± 9.28% and 26.00 ± 11.02% for 24, 48 and 72 hours, respectively. While for the 12.5% Tualang honey, the cells viability were 30.67 ± 2.60%, 40.33 ± 4.49% and 14.67 ± 0.88%. Treatment of 25% Gelam honey for 24, 48 and 72 hours showed 37.67 ± 0.88%, 21.33 ± 4.70% and 23.67 ± 0.33% of viable cells as compared to untreated control cells. In conclusion, the tested honeys have the ability to induce toxicity towards WRL-68 cells in dose dependent manner. However, only Acacia honey gave significant difference over time of incubation.

Keywords: Acacia, Tualang, Gelam, WRL-68 cells, MTT assay.