UNIVERSITI TEKNOLOGI MARA

IN VITRO CYTOTOXICITY OF HONEY FROM DIFFERENT ORIGINS ON WRL-68 NORMAL LIVER CELLS

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Project submitted in fulfillment of the requirements
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(Hons.)

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DECLARATION BY STUDENT

Project entitled “In Vitro Cytotoxicity of Honey from Different Origins on WRL- 68 Normal Liver Cells” 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, Mr. Norhisham Bin Haron. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Medical Laboratory Technology (Hons).

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ABSTRACT

Honey is a natural sweetener made of nectar which collected by honey bees from various floral sources and have many beneficial biological properties. However, excessive consumption of honey may lead to the adverse effect on the body. This study was aimed to investigate the cytotoxicity effect of Nenas, Itama and Thoracica honey with different dose and time of incubation on WRL-68 normal liver cells. Nenas, Itama and Thoracica honey from different localities were prepared at a range of concentrations from 0.098% to 100%. WRL-68 cells were treated with the selected honeys and incubated for 24 hours to obtain their IC_{50} value and significant toxic dose. The effect of honey on WRL-68 cell viability was determined by MTT assay and further analyzed using Graph Pad Prism 8 software. The whole procedure was repeated and significant toxic dose was used for 48 and 72 hours' incubation periods. After 24 hours, the cytotoxic activity of honey was significantly increased in dose dependent manner which shown at concentration of 12.5% for both Nenas and Itama honey while Thoracica honey at 6.25% ($P<0.05$). The IC_{50} value for Nenas, Itama and Thoracica honey after 24 hours' incubation were 7.50%, 7.43% and 6.98%, respectively. Different honeys exhibited different effects of incubation time on WRL-68 cell viability. Treatment with 12.5% Nenas honey caused reduction in the percentage of viable cells from 24 hours (62% ± 0.13) to 72 hours (14% ± 0.16). However, the viability of WRL-68 cells treated with 12.5% Itama and 6.25% Thoracica honey increased with incubation time. The percentage of viable cells for 12.5% Itama honey at 24 hours was 17.96 ± 0.60% and at 72 hours was 38.79 ± 3.91%, while for 6.25% Thoracica honey was 53.84 ± 7.78% at 24 hours and 84.33 ± 1.63% at 72 hours. In overall, treatment of honey in different dose and time of incubation demonstrates the cytotoxicity activity on WRL-68 normal liver cells.

Keywords: Nenas honey, *H. itama*, *G. thoracica*, WRL-68 cell line, MTT assay.