UNIVERSITI TEKNOLOGI MARA

EVALUATION OF ANTIMITOTIC ACTIVITY OF *Cosmos caudatus* (ULAM RAJA) BY USING *Allium cepa* ASSAY

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Project submitted in fulfilment of the requirements for the degree of

Bachelor of Medical Laboratory Technology (Hons.)

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DECLARATION

Project entitled "Evaluation of Antimitotic Activity of *Cosmos caudatus* by Using *Allium cepa* 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, Encik Zed Zakari Bin Abdul Hamid. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor of Medical Laboratory Technology (Hons).

Student's signature,

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ABSTRACT

EVALUATION OF ANTIMITOTIC ACTIVITY OF *Cosmos caudatus* (Ulam Raja) BY USING *Allium cepa* ASSAY

Cancer is the uncontrolled growth of abnormal cells. It is a dreadful disease and needs to be treated by tough therapies. However, synthetic drugs used to treat cancer could not differentiate between healthy and cancer cells. The drugs were cytotoxic and capable of affecting the normal neighbouring cells which could give obvious horrible and debilitating side effects to the patients. Natural products from the plant are still an alternative source in the search of antimitotic drugs. Therefore, *Cosmos caudatus* or commonly known as 'ulam raja' which is high in antioxidant was studied for its potential antimitotic activity. The present study aimed to evaluate *in vitro* antimitotic effect of *Cosmos caudatus* leaves extraction by using *Allium cepa* assay as a preliminary study for antimitotic activity. The leaves were extracted with aqueous and 50% ethanol solvent. The roots of *Allium cepa* were treated with both extraction solvent at different concentration (5mg/mL, 10mg/mL and 15mg/mL), distilled water (negative control) and 0.1mg/mL sodium azide (positive control). The antimitotic activity of *C. caudatus* leaves extractions were evaluated by growth inhibition (root length) and calculating the mitotic index of *Allium cepa* root tip meristematic cells. Both parameters were compared with negative control by using one-way ANOVA statistical analysis. The results revealed that *C. caudatus* extract exhibited cytotoxic effects and they were concentration dependent. Among the extract concentration, 15mg/mL 50% ethanol extract of *Cosmos caudatus* showed the shortest root growth (1.53±0.39 cm) and lowest mitotic index (7.90±0.12) compared to others. Therefore, this study revealed that *Cosmos caudatus* leaves extraction has potential of antimitotic which can be used as a natural anticancer agent. It is recommended further research should be demonstrated in other system involving *in vitro* and *in vivo* animal and human cancer cell lines for qualifying the perspective of anticancer activity and to identify effectiveness on human.

Keywords: Antimitotic activity, *Allium cepa*, *Cosmos caudatus*, Ulam raja