Mutagenicity evaluation of *Anastatica hierochuntica* L. aqueous extract *in vitro* and *in vivo*

Siti Rosmani Md Zin¹, Zahurin Mohamed², Mohammed A Aishawsh³, Won F Wong³ and Normadiah M Kassim¹

¹Department of Anatomy, Faculty of Medicine, University of Malaya, Kuala Lumpur 50603, Malaysia; ²Department of Pharmacology, Faculty of Medicine, University of Malaya, Kuala Lumpur 50603, Malaysia; ³Department of Medical Microbiology, Faculty of Medicine, University of Malaya, Kuala Lumpur 50603, Malaysia

Corresponding author: Mohammed A Aishawsh. Email: aishawshniam@um.edu.my

**Abstract**

*Anastatica hierochuntica* L. (*A. hierochuntica*), a folk medicinal plant, was evaluated for mutagenic potential via *in vitro* and *in vivo* assays. The *in vitro* assay was conducted according to modified Ames test, while the *in vivo* study was performed according to Organisation for Economic Co-operation and Development guideline for mammalian erythrocyte micronucleus assay. Four groups (*n*: 5 males and 5 females per group) Sprague Dawley rats were randomly chosen as the negative control, positive control (received a single intramuscular injection of cyclophosphamide 50 mg/kg), 1000 and, 2000 mg/kg *A. hierochuntica* aqueous extracts. All groups except the positive control were treated orally for three days. Findings of the *in vitro* assay showed mutagenic potential of AHAE at 0.04 and 0.2 mg/ml. However, no mutagenic effect was demonstrated in the *in vivo* study up to 2000 mg/kg. No significant reduction in the polychromatic and normochromatic erythrocytes ratio was noted in any of the groups. Meanwhile, high micronucleated polychromatic erythrocytes frequency was seen in cyclophosphamides-treated group only. These findings could perhaps be due to insufficient dosage of *A. hierochuntica* aqueous extracts to cause genetic damage on the bone marrow target cells. Further acute and chronic *in vivo* toxicity studies may be required to draw pertinent conclusion on the safety aspect of *A. hierochuntica* aqueous extracts consumption.

**Keywords:** *Anastatica hierochuntica*, mutagenicity, genotoxicity, Ames test, mammalian erythrocyte micronucleus assay, reverse mutation assay

*Experimental Biology and Medicine* 2017; 0: 1–11. DOI: 10.1177/1535370217748574