

PHYTOCHEMICAL ANALYSIS AND IN-VITRO EFFECTS OF ETHANOLIC TAMARINDUS INDICA SEED EXTRACT ON SNAKE VENOM

Soraya Ismail¹, Nur Farhana Azmi¹, Khin Maung Maung¹ and Pakeer Oothuman¹

¹*Kulliyah of Medicine, International Islamic University, Malaysia*

Presenter: Soraya Ismail, dr_soraya@iium.edu.my

Introduction: Snakebite has been categorised as a ‘neglected tropical disease’ by WHO in 2009 and it affects mainly the poorer countries like Africa and Asia. The standard treatment for snake envenomation is the anti-snake venom medication which can be very expensive, not readily available and specific against a snake species. This study was conducted to screen the phytochemical compounds of *Tamarindus indica* seed extract (TSE) and its *in-vitro* effects on snake venoms of three snake species; namely *Daboia russelli*, *Naja kaouthia* and *Ophiophagus hannah*.

Materials and method: Ethanolic Soxhlet extract of TSE was used. Phytochemical screening analysing for saponins, alkaloids, flavanoids, anthraquinone derivatives, arthraquinone glycosides, phenolic compounds, tannins, terpenoids, sterol and volatile oils were carried out. *In-vitro* enzymatic inhibition study on venom enzymes namely phospholipase A₂ (PLA₂), proteinase and phosphomonoesterase (PME) were studied by measuring the absorbance using the spectrophotometer. There were two main groups; Group 1: venom only; and Group 2: venom with TSE. The mean triplicate determination of venom enzyme activity post-exposure to TSE from Group 2 was taken and analysed against 100% venom enzyme activity from Group 1.

Results: Phytochemical screening showed that the TSE has (+++) phenolics and (+++) hydrolysable tannins. TSE significantly reduced all venom enzymatic activities i.e. PLA₂, proteinase and PME from the three snake species at 925 nm, 280 nm and 400 nm, respectively. SDS-PAGE experiment showed the disruption of venom protein bands from all three snake species when venom was exposed to 4.76 µg TSE.

Conclusion: Ethanolic TSE contains mainly phenolics and hydrolysable tannins which can reduce the snake venom enzymatic activities. This is possibly due to the formation of tannin-protein complex rendering the venom less potent.