

Poster Abstracts

PO-48

IN VITRO CYTOTOXICITY STUDY OF VENOM FROM THE RUSSELL'S VIPER (*DABOIA RUSSELLII*) AND COBRA (*NAJA NAJA*) IN SRI LANKA

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Objectives: Snakebite incidence caused by venomous snakes are important public health problem. *Daboia russelii* (Russell's viper) and *Naja naja* (Cobra) are among the most venomous snakes in Sri Lanka. The objective of this study was to compare two venoms in L929 fibroblast cell lines.

Methods: Twelve samples from each snake were used for our preliminary investigations. Protein concentration was measured in each samples and serial dilution of equal protein concentration were used in this assay. Cytotoxicity of the venoms were examined and correlated with negative and positive samples. 70% ethanol was used as positive control while only media was used as a negative control. Cytotoxic assay was performed in 2 hrs and 48 hrs incubation with different concentration of venoms. Growth inhibition was compared with untreated controls to find the venom concentration, which inhibited growth by 50% (IC₅₀). Furthermore, cell morphology versus treatment was examined under dissecting microscope with controls.

Results: Protein concentration of two species of snakes revealed that venoms of *Naja naja* contained high protein concentration (3.62±25mg/ml) compare with *Daboia russelii* (1.72±0.34mg/ml). The *in vitro* cytotoxicity of 2 hrs incubation with *Naja naja* and *Daboia russelii* venoms showed mean IC₅₀ value of 95.38 and 81.35 respectively. Further, 48 hrs incubation, IC₅₀ value of 81.65 and 48.32 respectively. Following incubation of L929 fibroblast cell lines with two venoms, various morphological abnormalities were observed. During preliminary study, all cells were dead in 320ug/ml and 160ug/ml in 2 hrs incubation with *Daboia russelii* and *Naja naja* venoms respectively. However, 48 hrs incubation, 80ug/ml concentration of *Daboia russelii* showed 100% cell death, but 180ug/ml with *Naja naja*. Further, this study revealed that mildest doses resulted in several cells losing their characteristic appearance and an increased number of rounded cells.

Conclusion: In conclusion, this study indicated that *Daboia russelii* venom show more cytotoxicity compare with *Naja naja* in both 2 hrs and 24 hrs incubation with L929 fibroblast cell lines. Meanwhile, results indicated that cell death caused by venoms of these two species, should be studied on the induction of apoptosis and necrosis. This is the first report that describes the *in vitro* cytotoxicity using cell lines and it could be established for investigating snake venom toxicity studies and efficacy of antivenoms.