ORAL PRESENTATIONS

[ID-O#098] Comparative In Vivo Toxicity Analysis of Daboia russelii Venom from Different Geographic Regions in Sri Lanka

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Introduction: Snakebites from Daboia russelii remain a pressing public health issue in Sri Lanka, leading to considerable illness and death rates. This study aims to explore the differing venom toxicity of Daboia russelii across various geographical regions within the country. Venom samples will be gathered from six distinct areas and analysed using a comprehensive mouse model to understand the variations in venom potency.

Methodology: The standardization of venom samples involves protein estimation utilizing a Bicinchoninic assay across different geographic locations. Lethality assessment entails the calculation of the Median Lethal Dose (LD50) for venom originating from each geographic region. This is achieved through subcutaneous administration in preliminary studies. Subsequent determination of the LD50, which signifies the venom dose causing mortality in 50% of tested animals, is carried out following intricate necropsies and histopathological investigations on crucial organs. Venom dilutions are introduced through intramuscular injections for this purpose.

Results: The analysis reveals notable discrepancies in venom protein concentrations among different geographic areas, with the highest levels recorded in the North Central Province (NCP) and the lowest in the South Province (SGP). Pooled venom samples from all regions demonstrate lethality to mice, with NCP venom displaying the highest toxicity. The presence of neurotoxic effects is evident, characterized by reduced mobility, hypotonia, and myoclonic jerks. Histopathological scrutiny uncovers necrotic and degenerative changes along with varying degrees of congestion in vital organs. Monitoring biochemical markers illustrates gradual elevation in liver enzymes and creatinine levels post- venom injection. NCP venom showcases pronounced hepatotoxicity, while venom from the Southern Province registers the least impact. Nephrotoxicity manifests predominantly in NCP and Southern Province venoms. Spleen histopathology showcases a spectrum of engorgement, haemorrhages, and haemolysis. The cardiotoxic, neurological, and pulmonary effects exhibit regional disparities.

Conclusion: This study reveals unique venom toxicity profiles of Daboia russelii across different regions in Sri Lanka, with the North Central Province showing particularly elevated venom potency. It highlights the diverse and region-specific complexities of snakebite envenomation's impact on vital organs. This underscores the need for tailored interventions aimed at effectively managing snakebite cases across diverse geographical settings.