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Immunochemical characterization of venom of medically important ants in Sri Lanka and determination of venom cross-reactivity with Western ant species

De Silva BD¹, Handunnetti SM¹, Premawansa S², Dias RKS³, de Silva NR⁴

¹Institute of Biochemistry Molecular Biology & Biotechnology, University of Colombo

²Department of Zoology and Environmental Science, University of Colombo

³Department of Zoology and Environmental Management, University of Kelaniya

⁴Medical Research Institute, Colombo

The number of reported cases of anaphylaxis in response to insect stings is on the increase. Fatalities have also been reported in certain cases, bringing into focus the medically important subject of Hymenoptera venom allergy (HVA). In Sri Lanka, the ant species responsible include *Odontomachus simillimus* (Smith, 1858), *Diacamma rugosum* (Forel, 1911), *Tetraponera rufonigra* (Jerdon, 1851) and *Solenopsis geminata* (Fabricius, 1804). The aim of this study was to obtain crude venom profiles for the four species of ants, identify possible allergenic venom components and determine cross-reactivity of patient serum with commercially available whole body extract (WBE) of the Western fire ant species, *Solenopsis invicta* (Buren, 1972). The ant species responsible for causing anaphylaxis were identified using accepted taxonomic keys, appropriate body length and weight measurements were also made. Crude venom components were separated under denaturing conditions using SDS-PAGE. The approximate molecular weights were estimated by calculating the respective R_f values and possible allergenic components identified with reference to the available literature. Sera was collected from patients that developed severe allergic reactions following ant stings (n=12) and the venom specific-IgE levels were quantified through the Phadia ImmunoCap method using the commercially available WBE of *S. invicta*. A total of 10 - 32 different crude venom proteins were obtained for the four species and 3 - 7 possible allergenic venom components were identified. Eight out of 12 patients showed positive results for the ImmunoCap test (IgE concentration >0.35 KU_A/L), indicating cross-reactivity with WBE of *S. invicta*. These preliminary findings on venom cross-reactivity indicate potential for development of assays to diagnose patients with ant venom allergy and to establish primary immunotherapy protocols for patient desensitization in Sri Lanka.

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