

Characterization of insecticidal peptides from the Japanese scorpion *Liocheles australasiae* venom

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Scorpion venoms are composed of a number of peptides, and more than hundred peptides have been reported to be neurotoxic to various organisms such as mammals, insects and crustaceans. Most of them act on sodium and potassium channels, and some of them show selective toxicity between mammals and insects. Elucidation of the molecular mechanism giving the selective toxicity between them should help design highly specific medicines or insecticides. We have two scorpion species, *Liocheles australasiae* and *Isometrus maculatus*, in Ishigaki Island, Japan. In this study, we isolated a insecticidal short chain peptide from *L. australasiae*. This peptide was purified by high performance liquid chromatography, and its structure was characterized by Edman sequencing and mass spectrometric analysis. As a result, this toxin is a short peptide of 36 amino acid residues with a molecular weight of 4200 Da, containing two disulfide bridges. The toxin shows toxicity towards crickets (*Acheta domestica*), causing severe paralysis and even death within 24 h. It shows no sequence homology with all known scorpion toxins, indicating that the toxin has a unique structure.