

S32-1 **Bioorganic Studies on Neurotoxic Venoms from Mammalian Origin**

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The discovery of novel neurotoxins will highly advance our knowledge of biological processes and lead to new strategies to treat painful and inflammatory diseases. Various toxic constituents from lower animals have been well characterized. However, among mammals, only a few members of the order Insectivora (shrews and solenodon) and Monotremata (platypus) possess toxic components. The short-tailed shrew *Blarina brevicauda* produces potent venom in its saliva, which is toxic to both vertebrates and invertebrates. We identified blarina toxin (BLTX), a tissue kallikrein-like lethal protease from its salivary glands [PNAS, 2004, Pure Appl Chem 2009]. Guided by the paralytic activity against mealworms, we recently isolated two neurotoxic peptides from the same genus and determined their primary amino acid sequences. The adult male duckbill platypus *Ornithorhynchus anatinus* carries a thorn on each hind leg, and uses this device to inject their competitors with poison. We identified 11 novel peptides from its venom fluid, including a heptapeptide (a fragment of C-type natriuretic peptide), which produced prominent inflammation and shaking behaviour in mice [JACS, 2009, Pure Appl Chem 2012]. I will present recent aspects of mammalian venoms from the viewpoint of bioorganic chemistry, including the comparative analysis of toxicity in the Cuban solenodon and its potential role in the species.