STUDIES ON POST-SYNAPTIC NEUROTOXIN OF SNAKE VENOM AND ITS MODE OF INTERACTION WITH ACETYL CHOLINE RECEPTORS

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The postsynaptic neurotoxins competitively bind to acatyloholine receptors and thereby block the conduction of nerve impulses transmitted by acetylcholine (Karlsson, 1979). These neurotoxins have been shown to be saucer shaped molecules having concave and convex faces (Low, 1979). This study was undertaken to identify the binding site of the neurotoxin to the acetylcholine receptor (AChR) and the aminoacid residue (s) involved in this interaction.

Siamensis toxin (STX) of *Naja naja siamensis* was purified by cation exchange chromatography using Bio-Rex 75 and by gel filtration on oephadex G-50. Bovine serum albumin (BSA) was conjugated to STX through its lysine 23 using N-Succinimidyl-3-(2-pyridyldithio) propionate (SPDP). The lysine-23-BSA-STX conjugate used in competitive binding studies showed that the STX binds to acetylcholine receptor through its concave face.

Acetylation of STX in the AChR-STX complex using radioactive acetic anhydride followed by cation exchange chromatography of the labelled STX dissociated from the complex comfirmed the competitive binding studies.

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References:

1. Karlsson E. (1979) Handbook of Experimental Pharmacology. Chemistry of protein toxins in snake venoms. pp 159-212.
2. Low B. W. (1979) Handbook of Experimental Pharmacology. The three-dimensional structure of postsynaptic snake neurotoxins. pp 213-257.