〔Biochemistry, **26**, 4592 (1987)〕

Role of C-Terminal Tail of Long Neurotoxins from Snake Venoms in Molecular Conformation and Acetylcholine Receptor Binding : Proton Nuclear Magnetic Resonance and Competition Binding Studies.

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The C-terminal four to five residues of β-bungarotoxin and Laticauda colubrina b have been cleaved off by carboxypeptidase P. The effect of such deletion on the toxin conformation has been monitored in proton NMR spectra and CD spectra. The removal of the C-terminal residues primarily affects the chemical shift of proton resonances of the residues close to the cleavage site and does not induce a major conformation change. Therefore, the C-terminal tail of long neurotoxins does not appear to be important in maintaing the specific polypeptide chain folding. On the other hand, competition binding with [^{3}H]-toxin α to nAChR has revealed that cleavage of the C-tail reduces the binding activity of toxins to nAChR. Thus it is likely that the C-terminal tail is directly involved in the binding of toxins to nAChR.

〔J. Protein Chem., **6**, 227 (1987)〕

Stopped-Flow Fluorescence Studies on Binding of Snake Neurotoxins to Acetylcholine Receptor.

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The stopped-flow technique has been applied to observe the time dependence of a tryptophanyl fluorescence change upon binding of postsynaptic snake neurotoxins to nicotinic acetylcholine receptor (*Narke japonica*). Examination of the kinetics of the fluorescence change reflecting a conformational change in the receptor in the process of binding of 28 short neurotoxins and 8 long neurotoxins to the receptor has revealed the following. Short neurotoxins associate with the receptor more rapidly than do long neurotoxins. A positive charge on the side chains of residues 27 and 30 and the overall net charge of the toxin molecule governs the magnitude of the binding rates of toxins to the recepter. The invariant residue Asp-31 is important for neurotoxicity, but is not critical for binding ability with the receptor.

〔J. Neurol., **234**, 207 (1987)〕

Acetylcholine-Receptor-Like Protein from Human Thymoma Associated with Myasthenia Gravis.

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Cobrotoxin-binding protein was isolated by affinity chromatography from human thymoma which had been surgically removed from patients with myasthenia gravis. The protein was composed of polypeptides with a molecular mass of 40, 51, 65, and 74 kilodaltons as determined by polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulphate. Isoelectric focusing of the protein gave pI values of 5.2-5.6 and 11. This is the first report of the isolation of the protein from human thymoma. These findings suggest that the cobrotoxin-binding protein from human thymoma patients with myasthenia gravis has subunits similar to those of fish electric organs or mammalian muscles.