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 monito-
red in proton NMR spectra and CD spectra. The removal of the C-terminal residues primarily 
ffects 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 maintaining the specific polypeptide chain folding. On the other hand, comp-
etition binding with (3H)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.

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 
et net charge of the toxin molecule governs the magnitude of the binding rates of toxins to the recep-
ter. The invariant residue Asp-31 is important for neurotoxicity, but is not critical for binding 
ability with the receptor.

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.