

Solution Structure of α -Conotoxin OmI, a Neuromuscular toxin Specific for the α_4/β_2 Subunit Interface of Neuronal Nicotinic Acetylcholine Receptor

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α -Conotoxin OmI, a 17-residue polypeptide isolated from the venom of the cone snail *Conus magus*, is a potent toxin which specifically blocks the mammalian neuronal nicotinic acetylcholine receptors composed of α_4/β_2 subunits. The three-dimensional solution structure of α -conotoxin OmI has been determined by two-dimensional ^1H NMR spectroscopy. The α -Conotoxin OmI adopts a well-defined compact structure with a global fold common to a $\alpha_{4/7}$ -subfamily of α -conotoxins. The backbone folding is stabilized by two disulfide bonds which connect the N-terminus to both the middle and C-terminus of the structure. The unique binding preference of α -conotoxin OmI to the α_4/β_2 subunit interface of neuronal nicotinic acetylcholine receptor has been studied through structural comparison with various α -conotoxins possessing distinct receptor subtype specificities.

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