

Identification of a MAGUK as a partner of MuSK, the muscle-specific receptor tyrosine kinase in Torpedo postsynaptic membrane.

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The muscle-specific receptor tyrosine kinase MuSK is part of a receptor complex for nerve-derived agrin responsible for the clustering of acetylcholine receptor (AChR) at the developing neuromuscular junction (NMJ). In this work, we have used chemical crosslinking experiments to identify potential effectors of MuSK in purified postsynaptic membranes from Torpedo electrocyte. One of the crosslink products containing MuSK identified by Western blotting corresponded to a 140 kDa band. On the other hand immunopurification of the Torpedo MuSK complex after Triton X-100 extraction showed that among a few polypeptides, a component of 40 kDa was present in the complex. MALDI-TOF mass spectrometry analysis of the 140 kDa crosslink product after trypsin digestion showed that several trypsin peptides disclosed strong homology with a Membrane-Associated Guanylate Kinase (MAGUK) named MAGI-1c. The same trypsin peptides were recovered in the 40 kDa copurified protein. Since MAGUKs are important scaffolding proteins that organize cytoskeletal-signaling complexes involved in the localization of various synaptic receptors, this component is likely to be involved in the formation and stabilization of AChR aggregates at the NMJ.

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