Abstract

Electroconvulsive shock (ECS) induces phosphorylation or dephosphorylation of various signaling molecules in the rat hippocampus. I have studied protein phosphorylation in the rat hippocampus after ECS, in the meantime I observed that a 75-kDa protein was phosphorylated immediately by ECS which was detected by anti phospho-p70 S6 Kinase antibody, but not by anti-p70 S6 kinase antibody. So the phosphorylated 75-kDa protein was purified from rat brain and identified as moesin, one of ezrin/radixin/moesin (ERM) family, which are general cross-linkers between cortical actin filaments and plasma membranes. Moesin phosphorylation on serine, threonine and tyrosine residues increased at 0 and returned to the basal level by 2 min after ECS in the rat hippocampus. Thr-558 of moesin, which is known to be directly related with moesin activation, was phosphorylated by ECS. In hippocampal slice cultures, KCl and a calcium ionophore, ionomycin also induced moesin phosphorylation on serine, threonine and tyrosine residues. In addition, moesin phosphorylation by depolarization induced by KCl was blocked by EGTA pretreatments. These results indicated that moesin is rapidly phosphorylated on threonine, serine and tyrosine residues by ECS in the rat hippocampus and the phosphorylation may be mediated by calcium-dependent signaling pathways.

Key words: Electroconvulsive shock, Moesin, Depolarization, Calcium, Hippocampus

Student number : 97801-881

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