

Abstract

Glutamate is a major excitatory neurotransmitter in the central Nervous System, which binds to its post-synaptic receptors after Ca^{2+} mediated release into the synaptic cleft. Depending on the mode of action, glutamate receptors are either ionotropic – opens ion channels; or metabotropic – G Protein coupled receptors which elicit responses through second messenger pathways. mGluR5 belongs to group 1 metabotropic glutamate receptor family. They are implicated to play a crucial role in the phenomena of learning and memory, and mediate LTD in the hippocampus. They are present predominantly on the post synaptic neurons and are regulated by endocytosis, both ligand-mediated and constitutive (independent of ligand). It has been established that the mGluR5 is endocytosed to recycling compartment from where it recycles back to the surface in 3.5 hour. In this study, I have investigated the role of phosphatases in the trafficking of mGluR5. Additionally, I also studied whether basal phosphorylation by kinases is required for the endocytosis of the receptors. The study indicates that the phosphatases are involved in the trafficking of mGluR5 since inhibition of phosphatases prevented the recycling of mGluR5.