Abstract

The process of protein phosphorylation is finely regulated by the coordinated actions of phosphatases and kinases. Phosphorylation of a receptor is believed to be an important posttranslational modification for regulating the trafficking, localization, signaling and degradation of a receptor. Phosphorylation provides an important regulatory mechanism which controls synaptic transmission and other neurophysiological processes in nervous system. Almost all types of glutamate receptors (G-protein coupled receptors as well as Ion channels) have been reported to be the substrate for phosphorylation. Group I metabotropic glutamate receptors (mGluRs) are GPCRs having widespread distribution in the brain and reported to be present on the surface of postsynaptic neuron. These receptors are not only actively involved in the regulation of cellular activity and synaptic plasticity but also reported to be involved in pathogenesis of various neuropsychiatric diseases. Group I mGluRs are regulated by protein phosphorylation, which serves as an important dynamic mechanism for regulating the receptor signaling, desensitization and trafficking. In this study, I am trying to investigate the role of tyrosine phosphorylation on mGluR5 trafficking using mouse primary hippocampal neurons as system. In the process, for the first time we are mapping tyrosine phosphorylation site(s) on the intracellular C-terminus of mGluR5 by site-directed mutagenesis. We hope our study will contribute towards further understanding of cellular and molecular mechanism of glutamate receptor regulation, especially trafficking.