

Abstract

Kainate receptors belong to the family of glutamate receptors, which include NMDA, AMPA and δ receptors. Glutamate receptors are widely found in the brain and therefore they are very dynamically investigated, especially from view of pharmacology, because there is great potential for finding new and more specific modulators which could be used in the treatment of neurodegenerative diseases.

The aim of this work was to extend the knowledge about the influence of neurosteroids on homomeric kainate receptors (GluK1, GluK2, GluK3) in which is the study of modulation by neurosteroids still at the beginning. We have investigated interactions of homomeric kainate receptors with selected neurosteroids (pregnenolone sulfate, pregnanolone sulfate, dehydroepiandrosterone, dehydroepiandrosterone sulfate) by using patch clamp method in the configuration of whole-cell recording and also by using microfluorometry. We have found out that the biggest modulating effect on homomeric kainate receptors is caused by pregnenolone sulfate, which inhibits glutamate responses of these receptors.

Keywords

kainate receptor, glutamate, neurosteroids, steroids, patch-clamp technique