ABSTRACT

Drug addiction, opiates respectively, is a social problem which seriousness is currently on the rise. One of key elements causing addiction is tolerance to increasing doses of drug causing abstinence syndrome during withdrawal and craving.

Opioid receptors are members of a large group of receptors coupled with heterotrimeric G-proteins (GPCR), whose properties can be investigated using agonist-stimulated binding [^{35}S] GTPγS. Many extracellular signals are transferred into a cell through GPCR. Opioid receptor agonists inhibit the activity of adenylyl cyclase and are coupled with G-protein group Gi/Go. This work is devoted to the study of changes in isolated plasma membranes of rat forebrain containing opioid receptors of healthy subjects with membranes acquired from morphine addicted subjects. The rats were long-term morphine treated in increasing doses, to develop the dependency. The comparison is done firstly by binding of [^{3}H]ouabain to Na,K-ATPase, which proves to be a negative standard of changes, secondly by binding [^{35}S]GTPγS to G-proteins, thereby providing the functional activity of G-protein in stimulating the binding by the agonist of δ-opioid receptors DADLE or agonist of μ-opioid receptors DAMGO. Furthermore, it has been studied the influence of prostaglandin E1 on binding [^{35}S]GTPγS after long-term stimulation by morphine and identified the effect of little potentiation of binding DAMGO by the influence of PGE1 after long-term morfine stimulation.

(In Czech)