MPEP, mGLU5 RECEPTOR ANTAGONIST, REGULATES NPYmRNA EXPRESSION IN HIPPOCAMPAL AND AMYGDALAR NEURONS

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Our earlier studies showed that the metabotropic glutamate receptor 5 (mGluR5) antagonist, MPEP, could regulate neuropeptide Y (NPY) neurons in the amygdala, influencing both peptide expression and its antianxiety effects. Two brain structures are particularly engaged in a regulation of anxiety, namely the amygdala and also the hippocampus. They both belong to the limbic system and contain NPY neurons and mGlu5 receptors. Therefore, in the present study, we examined the effect of MPEP on NPY and NPYmRNA expression in the amygdala and the hippocampus of the rat brain. NPY expression was studied by immunohistochemical method, and radioimmunoassay, and the NPY synthesis was examined using NPYmRNA in situ hybridization. Immunohistochemical localization of mGluR5 was also carried out. It was found that MPEP given 3 times every 8 h potently decreased NPYmRNA expression 30 min after the last dose in both those structures (to 8–20% of the control level). After single MPEP treatment, we did not observe any changes in NPYmRNA level in the hippocampus, and its decrease in the amygdala 6 h after MPEP administration. The obtained results suggest a positive regulatory control of NPY synthesis by mGlu5 receptors in hippocampal and amygdalar neurons.

Key words: MPEP, NPY, NPYmRNA, hippocampus, amygdala

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