Short communication

Effect of MPEP treatment on brain-derived neurotrophic factor gene expression

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Abstract:
Treatment with most antidepressants induces expression of the gene coding for brain-derived neurotrophic factor (BDNF) in the hippocampus (and cerebral cortex). Recent data indicate antidepressant-like activity of group I mGlu receptor (mGluR1 and mGluR5) antagonists in animal tests/models. We now report that chronic treatment with 2-methyl-6-(phenylethynyl)-pyridine (MPEP), a selective mGlu5 receptor antagonist, increased hippocampal but reduced cortical BDNF mRNA level (Northern blot). Desipramine, a classic antidepressant, increased BDNF mRNA level in both examined brain regions. This is the first demonstration that an antagonist of mGlu5 receptors, like a majority of well-established antidepressants, induces hippocampal BDNF gene expression. A significance of MPEP ability to reduce cortical BDNF needs further study. Nevertheless, this observation further indicates a potential antidepressant activity of the group I mGlu receptor antagonists in human depression.

Key words:
MPEP, BDNF, hippocampus, cortex, rat