

EFFECT OF (S)-3,5-DHPG ON LEARNING, EXPLORATORY ACTIVITY AND ANXIETY IN RATS WITH EXPERIMENTAL HYPOXIA

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We investigated the effects of (S)-3,5-DHPG, a selective agonist of group I metabotropic glutamate receptors (I mGluRs), on certain behaviors in rats after short-term hypoxia as a model of experimentally induced amnesia. The effect of (S)-3,5-DHPG administered intracerebroventricularly (*icv*) at doses of 0.01, 0.1 and 1.0 nmol was assessed using behavioral tests: the open field test, the passive avoidance response and the elevated “plus” maze test.

(S)-3,5-DHPG did not change the number of crossed fields and rearings and only at a dose of 0.01 nmol it increased the number of bar approaches in the open field test. (S)-3,5-DHPG used at all doses improved consolidation, and at doses of 0.01 and 1.0 nmol it improved retrieval in the passive avoidance test. (S)-3,5-DHPG did not produce any significant effects in control rats in the elevated “plus” maze test.

Hypoxia inhibited locomotor and exploratory activity of rats, significantly impaired consolidation and retrieval processes. We observed tendency to shortening the time spent in open arms and to decrease in the number of entries into open arms in the elevated “plus” maze in rats with underwent hypoxia.

In hypoxia-treated groups of rats, (S)-3,5-DHPG inhibited locomotor and exploratory activity in comparison with the control groups administered (S)-3,5-DHPG. Hypoxia significantly inhibited beneficial effects of (S)-3,5-DHPG on consolidation and retrieval in passive avoidance. (S)-3,5-DHPG only at the dose of 1.0 nmol used before hypoxia improved consolidation and at the dose of 0.01 nmol enhanced retrieval in comparison with saline-treated group subjected to hypoxia. (S)-3,5-DHPG only at the dose of 1.0 nmol in hypoxia-treated group shortened the time spent in closed arms and increased the number of entries into closed and open arms in the elevated “plus” maze vs saline-treated group subjected to hypoxia.

In rats subjected to hypoxia, (S)-3,5-DHPG, the agonist of I mGluRs, improved consolidation and retrieval and exhibited anxiolytic activity in dose-dependent manner.

Key words: (S)-3,5-DHPG, hypoxia, behavior, rats

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