



Antinociceptive effect of phenytoin in rats

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Abstract:

Phenytoin is an anticonvulsant agent of the first-generation that blocks voltage-gated Na⁺-channels. Systemic administration of phenytoin induces anticonvulsant effect in humans and in experimental animals. Moreover, it was demonstrated that this drug also inhibited neuropathic and post-stroke pain.

The present study was undertaken in order to determine the effect of a direct phenytoin administration into the lateral brain ventricle (*icv*) on pain perception in rats exposed to noxious thermal stimuli and to compare its probable effect with recently reported antinociceptive effect of lidocaine, another sodium channel blocker. Moreover, the effect of intraperitoneally (*ip*) injected phenytoin on pain perception was checked. A transient antinociceptive effect of phenytoin applied *icv* at doses of 0.13 and 0.65 μmol and no effect of phenytoin injected *ip* was observed. Antinociceptive effect of phenytoin was confirmed but it was less pronounced in comparison with similar activity of lidocaine. The obtained results also indicate that a single *icv* dose of phenytoin is less effective in inducing analgesia in the model of thermal pain in comparison with its effect in neuropathic pain reported in several papers. In conclusion, phenytoin is the drug of lesser importance in the study of the mechanism of the thermal pain perception in the brain.

Key words:

pain, phenytoin, intracerebroventricular administration, rat
