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## EFFICIENCY OF COMBINED CARBAMAZEPINE AND NOOTROPICS TO REDUCE SIDE EFFECT OF ANTICONVULSANT THERAPY

*The study is the part of research work “Investigation of the pharmacological properties of non-steroid anti-inflammatory drugs in conditions of depression, epilepsy and parkinsonism equivalents” (state registration 0113U000630).*

**ABSTRACT. Background.** The high rate of epileptic disease spreading determines the need of antiepileptic drugs investigation. Carbamazepine, being one of the most effective anticonvulsant drugs, has a wide spectrum of common side effects, and one of the supposed ways to solve this problem is to combine carbamazepine with nootropics. The possibility of the combined anticonvulsant and nootropic therapy still needs further researches. **Objective.** To study the efficiency of the combined carbamazepine and nootropics use in the experiment on rats and mice to reduce the side effects of anticonvulsant therapy in the form of impaired cognitive brain function and performance. **Methods.** The research was conducted on 50 white rats and 30 white mice divided randomly in 5 groups: group 1 received carbamazepine 40mg/kg; group 2 – carbamazepine 40 mg/kg + pyracetam 500 mg/kg; group 3 – carbamazepine 40 mg/kg + citicoline 500 mg/kg; group 4 – carbamazepine 40 mg/kg + memantine 10 mg/kg; group 5 – intact animals (control group). The myorelaxing effects of the therapy, physical working capacity, neurotoxicity of the drugs were estimated on the 4<sup>th</sup> day of nootropics administration and 30 minutes after single carbamazepine administration. Histological examination of the brain specimens was performed; the doses of carbamazepine used in morphological study were 40 mg/kg, 150 mg/kg and 720 mg/kg intragastrally. **Results.** Administration of carbamazepine occurs moderate morphological changes of brain tissue caused by a reaction on the part of the microvasculature, the severity of which depends on the dose of the drug. **Conclusion.** The most effective combinations that remove the central side effects of carbamazepine are carbamazepine + gliatilin and carbamazepine + citicoline.

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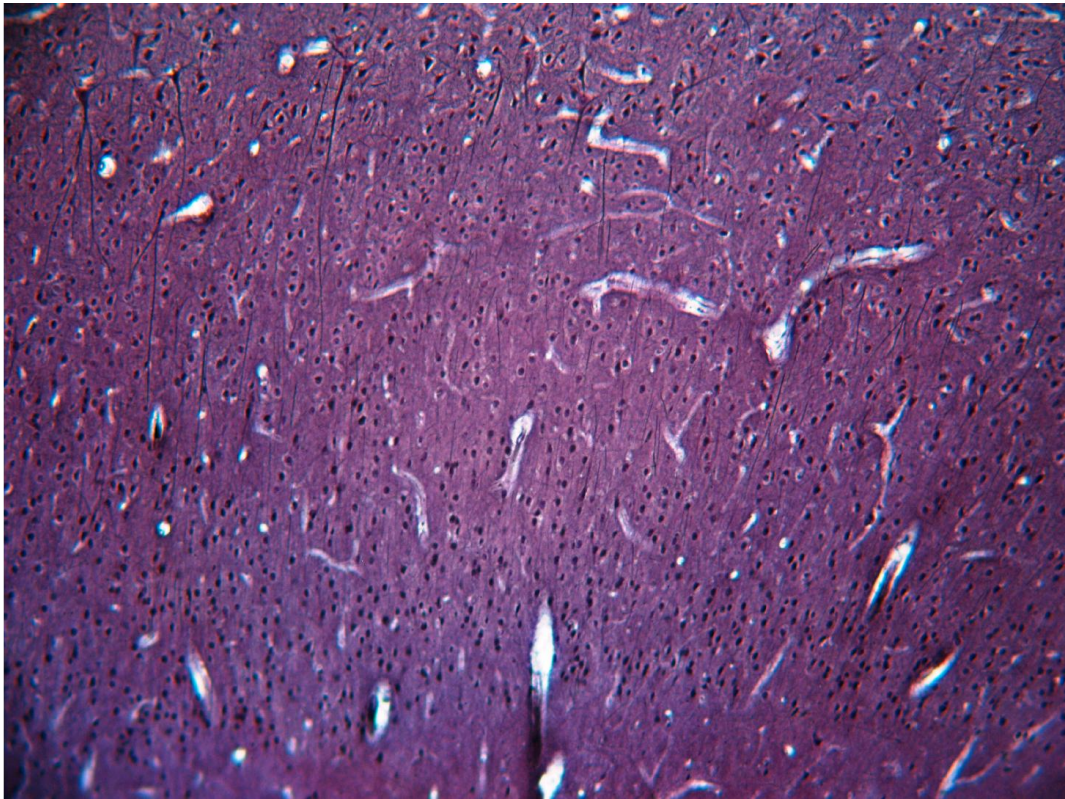


Fig. 1. Area of the rat brain frontal lobe cortex after the administration of carbamazepine 40mg/kg. Hematoxylin & Eosin staining. Magnification  $\times 200$ .

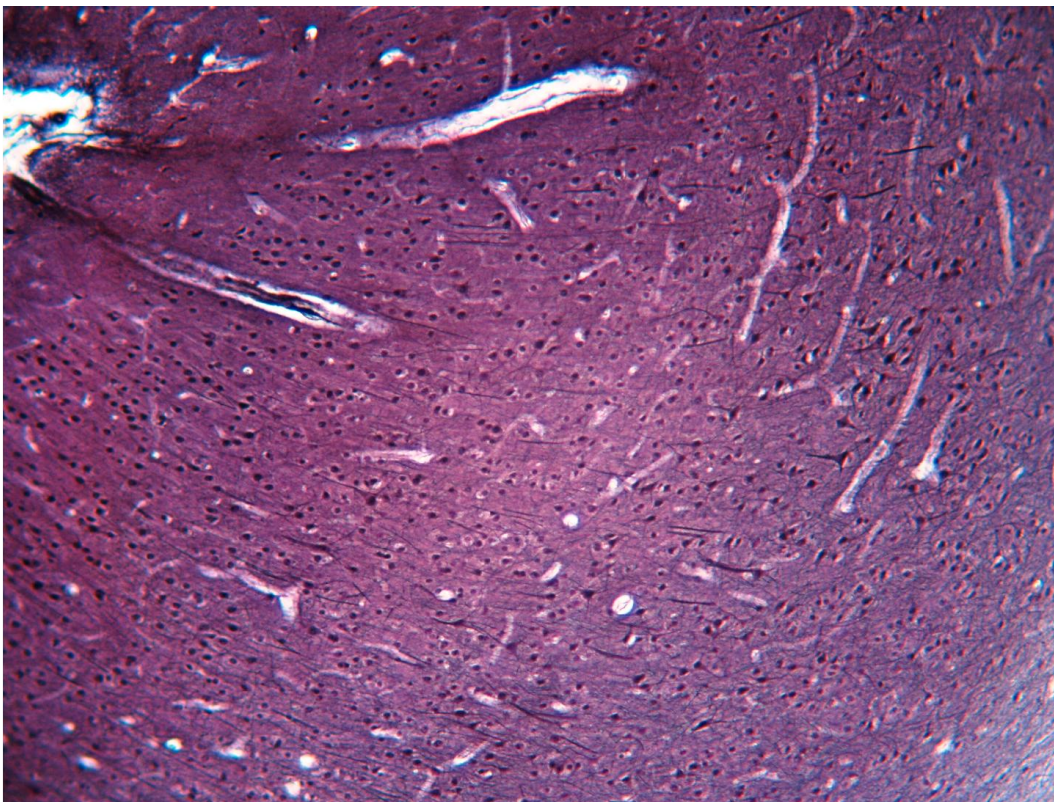


Fig. 2. Area of the rat brain frontal lobe cortex after the administration of carbamazepine 720mg/kg. Hematoxylin & Eosin staining. Magnification  $\times 200$ .

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