

#### **Section 4. Physiology and biochemistry of human and animals**

mg/kg - 33,5 mg/kg. These doses were found experimentally where chemical agents showed expressed pharmacological properties.

In this work 200 rats and 50 mice were used. Bemetil was used as a reference agent.

To study the actoprotective activity (an influence of synthesized compounds on work capacity) the following methods were used: swimming of rats with load on tail in a pool with cold (10-14 °C), normal (28 °C) and hot water (40 °C). The antihypoxic activity was determined in mice by means of a method of hemic hypoxia with sodium nitrite

As the result of the study of the actoprotective activity of the tiobarbituric acid derivatives under hypothermia and hyperthermia were found the compounds, which possess the high actoprotective activity. Investigated compounds in dose of 2,5 mg/kg really 2,5-3 times increased swimming time of rats with load on a tail in a pool in comparison with the control and with the expression of the effect they surpassed the drug of comparison bemetil in dose 33,5 mg/kg. Some of studied compounds protected animals from hemic hypoxia, which was caused by subcutaneous NaNO<sub>2</sub>. Impact of the compounds structure on their properties was found.

#### **AN EXPERIMENTAL RESEARCH OF THE ACTOPROTECTIVE ACTIVITY OF THE NOVEL TIOBARBITURIC ACID DERIVATIVES**

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Actoprotectors are a new class of remedies, which are able to raise mental and physical activities in normal and difficult conditions. Nowadays an arsenal of modern actoprotectors is limited. In clinical practice almost one bemetil (2-ethyltiobenzimidazol hydrobromide) is used, which possesses in addition to the mentioned effects antihypoxic, antimutagenic, immunostimulative and other characteristics. However because of the side effects, which are typical for this drug (insomnia, allergic reactions and others), it is relevant to create new medicines.

The aim of our study is the search for novel actoprotectors among tiobarbituric acid derivatives in comparison with bemetil. Synthesis of the investigated compounds was carried out in a PSL-5 (problem scientific laboratory) of I.I. Mechnikov I.I. Odessa national university.

Rats (180-200 g.) and mice (20-30 g.) were investigated in the experiments. The chemical substances were administered to mice and rats intraperitoneally and subcutaneously in doses of 2,5 mg/kg - 12,5 mg/kg, bemetil in doses 2,5