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**POLYPHENOL EUPHORBIN AS A FORM OF INTRACELLULAR MODULATOR  
OF FUNCTIONAL ACTIVITY OF GABA RECEPTORS**

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**Relevance.** Numerous scientific findings indicate a promising pharmacotherapy of neurodegenerative diseases by acting on the gamma-amino butyric acid system (GABA). Short presynaptic plasticity associated with neurotransmitter release, determines the shape and postsynaptic neuron response plays a key role in the coding information in the nervous system. The regulation of presynaptic  $\text{Ca}^{2+}$  channels may facilitate or inactivate the incoming flow of ions  $\text{Ca}^{2+}$ . This strong dependence of neurotransmitter release from presynaptic  $\text{Ca}^{2+}$ -current can predict mechanisms of regulation that will have an impact on short-term presynaptic plasticity.

**Purpose of the study:** Effect of polyphenol euphorbin on intracellular calcium of a synaptosomes of a brain of rats against the background of GABA.

**Materials and methods.** Synaptosomes purified from rat brain by two-step centrifugation. To measure the amount ( $[\text{Ca}^{2+}]_i$ ) was calculated from the equation Grynkewich.

**Results and its discussion.** The incubation of synaptosomes with various concentrations of GABA, then adding glutamate resulted in dose-dependent decrease cytosolic calcium levels and thus decreases NMDA-excitatory neurotransmitter system.

Pre-incubation of polyphenol euphorbin (10-100  $\mu\text{M}$ ) with CTC synaptosomes-complex, did not increase the level of fluorescence. Meanwhile euphorbin (50  $\mu\text{M}$ ) reduced fluorescence and therefore led to an increase of cytosolic calcium levels of GABA on the background (50  $\mu\text{M}$ ), the complex-CTC synaptosomes isolated from rat brain induced by glutamate.

Pre-incubation of the GABA receptor antagonist picrotoxin with CTC-synaptosomes complex on the background of the polyphenol euphorbin (10-100  $\mu\text{M}$ ), stabilized the locked state ionophore and thus reduced the level of fluorescence. The maximum decrease in cytosolic calcium amid glutamate (50  $\mu\text{M}$ ) was observed in the concentration (50  $\mu\text{M}$ ) polyphenol. This result shows that the background of the GABA receptor antagonist picrotoxin polyphenol reduces cytosolic calcium, where no polyphenol Braking acts on the GABA receptor.

In the case of pre-incubation of diazepam and phenobarbital at concentrations of 50-100  $\mu\text{M}$  in the background with a polyphenol euphorbin-CTC synaptosomes complex significantly enhances the effect of GABA receptor agonists.

**Conclusions.** In the study of the action of polyphenol euphorbin on cytosolic calcium levels in the complex CTC-synaptosomes revealed a slight decrease in cytosolic calcium levels compared with controls. The results indicate the possibility of polyphenol euphorbin as an antagonist, the excitation of GABAergic neurotransmitter system.