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GABA-ERGIC AXOSOMATIC SYNAPSES OF RAT CORTICAL NEURONS

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The aim of the study was to investigate the organization of GABAergic axosomatic synaptic terminals in the parietal, cingular and piriform cortical areas of the rat brain. The methodological approach of the study was an immunohistochemical staining for glutamate decarboxylase – the GABA-synthetic enzyme. Samples were explored using confocal laser microscopy. Brain of adult male Wistar rats ($n = 11$) were studied. As a result of the work, information of the morphological organization of presynaptic terminals from distinct cortical areas was obtained. It has been found that GABAergic synapse's sizes and their distribution densities onto a pyramidal soma in distinct cortical regions are significantly different ($P < 0.05$). It has been shown that confocal laser microscopy can provide objective information for investigating synapse structure. The obtained results allow a more complete assessment of inhibitory structures of the brain and their interaction with glutamatergic pyramidal neurons. The methodological approach used in the study can help to identify morphological characteristics of GABAergic system dysfunction.

Keywords: GABA, pyramidal neurons, cerebral cortex, synapse, confocal laser microscopy