

содержания рецепторного белка. Тормозные эффекты, опосредованные ГАВА_A-рецептором, содержащим субъединицу $\alpha 1$, являются неотъемлемой частью физиологического баланса возбуждения—торможения в нейронных сетях, и любое изменение в структуре или функционировании комплексов субъединиц ГАВА_A-рецептора может быть основой патогенеза многих заболеваний центральной нервной системы (Crunelli et al., 2020; Hassan et al., 2022). Полученные нами данные могут быть полезными для дальнейших исследований специфических изменений в нейротрансмиссии ГАВА, имеющих важное значение для разработки новых методов профилактики и лечения неврологических расстройств, возникающих у детей, переживших асфиксию во время родов.

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Все процедуры, выполненные с участием животных, соответствовали этическим стандартам, утвержденным правовыми актами РФ, Правилам проведения работ с использованием экспериментальных животных при соблюдении требований Директив Совета Европейского сообщества (86/609/ЕЕС) об использовании лабораторных животных, а также требованиям Комиссии по биоэтике ИФ РАН (Протокол этического комитета ФГБУН Института физиологии им. И.П. Павлова РАН № 10/14 от 14.10.2022 г.).

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Effect of Perinatal Hypoxia (Asphixia) on the Distribution of the $\alpha 1$ GABA_A-Receptor Subunit in the Neocortex of Newborn Rats

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The aim of this work was to study the distribution of the $\alpha 1$ GABA_A-receptor subunit in the neocortical layers of rats in the neonatal period after exposure to hypoxia. The effect of hypoxia on the brain of newborn rats was carried out on the 2nd neonatal day for 1 h at an oxygen content in the respiratory mixture of 7.8%. An immunohistochemical reaction was used to detect the $\alpha 1$ GABA_A-receptor subunit. The quantitative protein content was estimated from the density of immunostaining of the reaction product in the cytoplasm and processes of neurons. The somatosensory area of the neocortex was studied on the 5th and 10th neonatal days (P5, P10). It has been established that in the neocortex there is a significant population of young neurons containing the $\alpha 1$ subunit, which is part of the GABA_A-receptor in the early stages of the neonatal period. By the end of the neonatal period in control animals, the staining density of the product of reaction to the detection of GABA_A $\alpha 1$ in the layers of the neocortex increases significantly. Exposure to perinatal hypoxia causes a reduction in the number of neurons containing the $\alpha 1$ GABA_A-receptor subunit and a significant decrease in the density of immune staining in all layers of the neocortex.

Keywords: perinatal hypoxia, $\alpha 1$ GABA_A-receptor subunit, neocortex, neonatal period