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Effect of Severe Hypobaric Hypoxia on the Levels of Autophagy Marker LC3 in the Rat Hippocampus

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Autophagy is an intracellular mechanism of degradation of cytoplasmic molecules and organelles in autophagosomes which is necessary for maintaining cellular homeostasis and normal functioning of neurons especially under severe exposures. Despite this the role of autophagy in the mechanisms of adaptive and pathological reactions of the brain is still poorly understood and represents a goal for investigations. The study of autophagy processes in neurons under severe exposures is of fundamental importance and at the same time can be useful from the point of view of developing specific medications that target components of the autophagic cascade. Since hypoxia is thought to be one of the most widespread injurious factors, the purpose of this study was to estimate the activity of autophagy in the hippocampus of rats after severe hypoxia exposure using immunohistochemistry. It was found that severe hypobaric hypoxia (180 mm Hg, 3 h) decreased the LC3 levels in the neurons of the hippocampal fields 1 day after the exposure which is a hallmark of an increase in autophagy activity. However, by the third day after hypoxia, the LC3 levels were restored. The data obtained in the model *in vivo* indicate that autophagic degradation process is intensified in the hippocampus of rats in response to hypobaric hypoxia.

Keywords: autophagy, hypoxia, LC3, brain neurons