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Comparative Assessment of Electrical Activity of the Brain During Normobaric and Hypobaric Hypoxia

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ABSTRACT

Providing the body with oxygen is one of the most pressing problems of modern physiology and theoretical medicine, since hypoxia underlies the pathogenesis of most diseases, and an in-depth study of these processes is of great practical importance. For the normal functioning of the mechanisms for maintaining the body's energy balance, it is necessary to preserve the parameters that characterize the functional abilities of oxygen transport systems. Disruption of this process leads to disruption of oxygen homeostasis and the occurrence of hypoxia, i.e. to a discrepancy between O_2 delivery and the metabolic demand of an organ or cell. The main universal indicator of oxygen homeostasis, reflecting the adequacy of oxygen delivery and consumption, is the oxygen tension in the blood (PaO_2). During hypoxia, PO_2 changes either due to a decrease in barometric pressure (hypobaric hypoxia -HH), or due to a decrease in the O_2 fraction in the inspired air under normal atmospheric pressure conditions (760 mmHg) (normobaric hypoxia -NH). It has been established that in both hypobaric and normobaric hypoxia, the observed changes in functional indicators are a consequence of a decrease in the partial pressure of oxygen in the environment (PO_2).

Keywords: hypobaric and normobaric hypoxia, cerebral cortex, medulla oblongata, neuronal activity

References:

1. Angeli, C. N.; Shute, R.J.; Slivka, D.R. Higher muscle tissue oxygenation when exposed to hypobaric hypoxia than normobaric hypoxia. *J. Hum. Perf. Extrem. Environ.* **2019,** *15*, 7. DOI:10.7771/2327-2937.1117
2. Rosales, A.M.; Shute, R.J.; Hailes, W.S.; *et al.* Independent effects of acute normobaric hypoxia and hypobaric hypoxia on human physiology. *Sci. Rep.* **2022,** *12*, 19570. DOI:10.1038/s41598-022-23698-5

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