поддержание межклеточного метаболического сопряжения в поврежденных регионах головного мозга.

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Disturbance in Expression of Lactate Transporters in Brain Cells under Acute Toxic Effect of Beta-Amyloid *In Vitro* and *In Vivo*

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Decreased energy metabolism in the brain correlates with cognitive impairment in Alzheimer's disease. Accumulating experimental data indicate that lactate transporters and monocarboxylate transporters (MCTs) are directly involved in cerebral energy metabolism. However, to date, changes in lactate levels and MCT content in Alzheimer's disease remain unclear. The aim of the study was to study the content of lactate and of its transporters – MCT1 and MCT2 in cells of neuronal, astroglial and endothelial nature under acute toxic effects of beta-amyloid (Aβ1–42) in

vitro and in vivo. Under conditions of acute toxic action of Aβ1–42 in vivo, a significant ($P \le 0.05$) decrease in the level of lactate in the hippocampal tissue and an increase ($P \le 0.05$) in the dialysate were found. At the same time, a low ($P \le 0.05$) levels of MCT1 and MCT2 was set. In vitro, significantly high ($P \le 0.05$) production of lactate by astrocytes was revealed, coupled with low ($P \le 0.05$) level of MCT2 on neurons. Thus, it was found that Aβ1–42 causes a decrease in the level of lactate in the hippocampal tissue and an increase in its level in dialysate in vivo, which correlates with the impaired level of MCT1 and MCT2. This indicates a violation of energy metabolism due to the acute toxic effect of Aβ1–42. At the same time, the revealed increase in the production of lactate by astrocytes in vitro may indicate the inclusion of a compensatory mechanism aimed at maintaining the astrocyte-neuronal interaction.

Keywords: Alzheimer's disease, lactate, MCT, energy metabolism