

PROTECTIVE EFFECT OF NICOTINAMIDE IN ACUTE BRAIN ISCHAEMIA

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The purpose of the present experiment was to study the brain energetic status under conditions of acute isolated cerebral ischaemia as well as ischaemia with the use of nicotinamide that was NAD precursor and PARP inhibitor. The results of the study show that under conditions of acute ischaemia, the level of adenyl nucleotides in its tissue results in significant changes. ATP content drops to 42.2 % as compared to control while ADP and AMP levels increase approaching 260.9 % and 233.3%, respectively. Brain ischaemia is accompanied by slight changes in adenyl nucleotide overall content (up to 9.1%), a marked decrease in ATP/ADP to 16.2%, and a reduction of the energetic charge value to 63.3% in comparison with control. The use of nicotinamide under cerebral ischaemia conditions contributed to restoring energetic metabolism. ATP rose to a level 1.5 times greater than in control, and there was a 3.5-fold increase compared to isolated ischaemia. ADP and AMP levels did not decrease after occlusion. Ischaemia with the use of nicotinamide was accompanied by a decrease to 39.8% in a overall content of adenyl nucleotides in the brain. There was no evidence of significant changes in ATP/ADP levels. The energetic charge value increased to normal. Preventive administration of nicotinamide in acute cerebral ischaemia contributes to the preservation of the cell energetic status.