

عنوان مقاله:

Chromon-3-aldehyde derivatives restore mitochondrial function in rat cerebral ischemia

محل انتشار:

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خلاصه مقاله:

Objective(s): This work aimed to assess the effect of 10 new chromon-3-aldehyde derivatives on changes of mitochondrial function under the conditions of brain ischemia in rats. Materials and Methods: The work was executed on BALB/c male-mice (acute toxicity was evaluated) and male Wistar rats, which were used to model cerebral ischemia by permanent middle cerebral artery occlusion. The test-substances, 10 derivatives of chromon-3-aldehyde and the reference drug, N-acetylcysteine, were injected after modeling of ischemia for 3 days. After that, neurological symptoms, the area of cerebral infarction, and change in mitochondrial function were evaluated. Results: It was established that use of all chromon-3-aldehyde derivatives contributed to the recovery of mitochondrial function, which was reflected in enhanced ATP-generating activity, maximum respiration level, respiratory capacity, as well as reduction in the intensity of anaerobic reactions, apoptosis, and normalization of the mitochondrial membrane potential. The most pronounced changes were noted with the use of 6-acetyl substituted chromon-3-aldehyde derivative, the administration of which decreased neurological symptoms and size of brain necrosis area. Conclusion: The obtained data may indicate the most pronounced neurotropic effect in a number of test-objects has the 6-acetyl substituted derivative of chromon-3 aldehyde, realized by restoration of mitochondrial function, which may be the basis for further study of chromon-3-aldehyde derivatives.

کلمات کلیدی:

Acetylcysteine, Apoptosis, Brain ischemia, Cell respiration, Laboratory animals, Mitochondria

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