INFLUENCE OF ACUTE AND CHRONIC 1,2,3,4-TETRAHYDROISOQUINOLINE ADMINISTRATION ON THE EXPRESSION OF PROENKEPHALIN mRNA IN THE RAT STRIATUM

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Animal studies have shown that a depletion of dopamine or blockade of dopamine D2 receptors in the striatum produces an increase in striatal proenkephalin (PENK) mRNA expression and an increase in GABAergic transmission in the globus pallidus. Therefore, it has been suggested that an enhanced striatal PENK mRNA expression may reflect to some extent an increase in the activity of the GABAergic striatopallidal pathway whose overactivity has been suggested to take place in the course of Parkinson’s disease. Therefore, the aim of the study was to investigate the role of 1,2,3,4-tetrahydroisoquinoline (TIQ), an endogenous substance suspected of producing parkinsonism in humans, in the regulation of the activity of GABAergic striatopallidal pathway in rats. TIQ administered acutely at the dose of 100 mg/kg ip increased the PENK mRNA expression in the dorsal part of the striatum at two levels I and II (rostral and central striatum, respectively). No changes were noticed in the ventral part of the striatum. Moreover, TIQ given chronically to rats for 3 weeks did not modify the level of PENK mRNA in any examined part of the striatum. The present results show that the effect of TIQ on the PENK mRNA expression is different from that described for proparkinsonian model neurotoxins (MPTP, 6-OHDA) as well as for typical neuroleptics, such as haloperidol.

Key words: 1,2,3,4-tetrahydroisoquinoline, proenkephalin mRNA, in situ hybridization, parkinsonism, striatum, rat

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