EFFECT OF TOPIRAMATE ON THE KAINATE-INDUCED STATUS EPILEPTICUS, LIPID PEROXIDATION AND IMMUNOREACTIVITY OF RATS

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Topiramate, a new anticonvulsant, has been reported to possess neuroprotective effects in both in vivo and in vitro experiments. In the present study, the effect of topiramate (40 and 80 mg/kg ip) on the fully developed kainate-induced status epilepticus was evaluated in the rat. Injection of kainate (15 mg/kg ip) evoked recurrent limbic seizures which lasted several hours. Topiramate injected 1.5 h after kainate administration had no effect on the seizures and mortality of the animals. Biochemical study revealed that at 80 mg/kg ip, topiramate significantly attenuated the kainate-induced lipid peroxidation in the piriform cortex and showed similar tendency in the frontal cortex. Besides the central nervous system, the kainate-induced seizures evoked significant changes in immunoreactivity, such as reduction in thymus weight and the proliferative activity of splenocytes, and the splenocyte-increased production of interleukin-10, but not interferon-γ. Topiramate did not affect the kainate-induced reduction in thymus weight, but attenuated changes in the proliferative activity of splenocytes. It is concluded that topiramate, when given during the fully developed kainate-induced status epilepticus in rats, has no effect on seizures, but attenuates lipid peroxidation in piriform cortex and prevents certain changes in immunoactivity.

Key words: topiramate, kainate, seizures, lipid peroxidation, immunoreactivity, cytokines

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