

## STRUCTURAL REORGANIZATION OF THE HIPPOCAMPUS OF KRUSHINSKY–MOLODKINA (KM) RATS DURING EPILEPTOGENESIS

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It is known that seizures provoke neuronal death. The **aim** of the study was to determine apoptosis and autophagy in the hippocampus of Krushinsky–Molodkina (KM) rats at the different stages of audiogenic kindling.

**Methods.** Male and female adult KM rats genetically prone to audiogenic seizures (AGS) were used in the experiments. 4, 7 and 25 AGS experienced KM rats were used in the experiments to analyze the seizure-induced alterations in apoptosis and autophagy in the hippocampus. The hippocampi were collected either 24 hours or in a week after the last AGS. Expression of p53, caspase 3, 8 and 9, cytochrome C, McI1, Bcl-2, Beclin-1, p62, LC3 was analyzed by Western blot. Histological sections containing the hippocampus were stained for Tunel, LC3B and cathepsin D.

**Results.** 4 AGS induced neither apoptosis nor autophagy. While 7 AGS led to the activation of p53, de-

creasing of Bcl-2 expression, and an increase of Tunel positive cell number that accompanied by decreasing of granular cell number. In a week after 7 AGS, we observed the activation of autophagy, which can partly mediate the survival of granular cells. After 25 AGS we did not see any apoptotic cell and autophagy activity, but the cell population in the dentate gyrus was dramatically decreased.

**Conclusion.** Our data demonstrated the activation of apoptosis and autophagy only in the initial stages of audiogenic kindling. We suggest that these processes actively contribute to epileptogenesis and fast reorganization of the hippocampal network towards epileptic phenotype.

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