

# **Influence of flavonoids from Saperavi on learning/memory characteristics and the number of BrdU-positive cells of the gyrus dentatus in the kainate-induced animal model of epilepsy**

***Mariam Qurasbediani***

e-mail: [mariami.kurasbediani@ens.tsu.ge](mailto:mariami.kurasbediani@ens.tsu.ge)

Department of Biology, Iv.Javakhishvili Tbilisi State University, Faculty of Exact and Natural Science,  
University str.2, 0143 Tbilisi, Georgia

Epilepsy is a chronic neurological disease affecting roughly 1% of the human population. The progressive spontaneous recurrent seizures (SRS) induces hippocampal neuronal loss, cognitive impairment and psychiatric comorbidities. Regular treatment with the antiepileptic drugs (AED) is useful for controlling seizures. However, more than 35% of people with temporal lobe epilepsy have chronic seizures that are resistant to AEDs. Thereby new approaches in therapies for easing the frequency and intensity of SRS, learning and memory impairments, and depression in TLE are needed. In recent years the new treatment strategies for neurodegenerative disorders focuses on flavonoids - plant antioxidants, which are characterized by anti-allergic, neuroprotective activity [1,2].

The aim of the present work was to investigate the effects of active flavonoids from Georgian endemic grapes species saperavi on behavioral and morphological alterations induced by kainic acid - status epilepticus. kainic acid rat model of temporal lobe epilepsy was used to define antiepileptic and neuroprotective potency of flavonoids from Saperavi.

Our previous experiments showed that early postnatal supplementation with flavonoids from Saperavi grapes have beneficial effects on learning/memory mechanisms. The same doses of Saperavi flavonoids significantly increase the number of BrdU positive cells in the dentatus gyrus of the rats.

The aim of the present work was to investigate the effects of flavonoids from saperavi (25mg/kg per day, 8 days) on kainic acid-induced epileptogenesis, epilepsy associated learning/memory disturbance and neurogenesis in the dentatus gyrus of the hippocampal formation.

Our results demonstrate that exposure of rats with kainic acid epilepsy (15mg/kg, single administration) to flavonoids from Saperavi (8 days, 25mg/kg per day) induces correction of memory impairment induced by epilepsy and this was in correlation with potentiation of the number of BrdU-positive cells in the dentatus gyrus of the hippocampus.

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## **References**

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2. D. Vauzour. J Sci Food Agric.( 2014) 94(6):1042-56.