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Influence of flavonoids from Georgian endemic grape species *Saperavi* on learning/memory characteristics and the number of BrdU-positive cells of the *Gyrus Dentatus* in the kainic acid-induced rat model of epilepsy

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In recent years the new treatment strategies for neurodegenerative disorders focuses on flavonoids-plant antioxidants, which are characterized with anti-allergic, neuroprotective activity. Flavonoids permeate the blood-brain barrier and are able to localize in the brain, particularly with significantly higher levels in hippocampus and cortex, suggesting that they are candidates for direct neuroprotective and neuromodulative actions. The hippocampus plays an important role in a learning/memory processes and it is also a common focal site in epilepsy. The progressive spontaneous recurrent seizures induce hippocampal neuronal loss, cognitive impairment and psychiatric comorbidities. Regular treatment with the antiepileptic drugs is useful for controlling seizures. However, more than 35% of people with temporal lobe epilepsy have a refractory seizure. Our previous experiments showed that early postnatal feeding with flavonoids from saperavi have beneficial effects on hippocampal related learning/memory mechanisms. 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 feeding with flavonoids from saperavi (8 days, 25 mg/kg per day) on kainic acid-induced epileptogenesis, epilepsy associated learning/memory disturbance and neurogenesis in the dentatus gyrus of the hippocampal formation. Behavioral and morphological experiments were performed. Our results demonstrate that exposure of rats with kainic acid epilepsy (15 mg/kg, single administration) to flavonoids from saperavi induce correction of epilepsy induced memory impairment and this was in correlation with potentiation of the number of BrdU-positive cells in the dentatus gyrus of the hippocampus.

Biography

Nanuli Doreulee has received her PhD from Beritashvili Institute of Physiology. She has completed her Post-doctoral studies at the Brain Research Institute, Moscow and H Haine University of Duesseldorf, Germany. She is the Head of Direction of Human and Animal Physiology at Tbilisi State University. She has published more than 20 articles in high impact factor journals in recent years.

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