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Early postnatal feeding of rats with flavonoids from Georgian endemic grape species *Saperavi* reduce frequency and duration of epileptic activity in CA1 field of hippocampus

Nanuli Doreulee, Butsiko Chkhartishvili, Ana Chakhnakia, Mariam Qurasbediani, Manana Chikovani, Roza Bukia and Besarion Partsvania
Tbilisi State University, Georgia

Epilepsy is a chronic neurological disease affecting roughly 1-2% of the human population worldwide. Progressive spontaneous recurrent seizures lead to hippocampal neuronal death and cognitive/mental disturbances. The seizure activity during epilepsy decreases the antioxidant defense mechanism in the brain and increases the amount of free radicals, which further induces the oxidative stress. Considering the importance of oxidative stress in epilepsy antioxidant and anti-inflammatory treatments may attenuate or prevent epilepsy-related neurodegenerations. Flavonoids are historically part of the basic human diet and have been identified as powerful antioxidants. Flavonoids permeate the blood-brain barrier and are able to localize in the brain, suggesting that they are candidates for direct neuroprotective and neuromodulative actions. Our previous experiments showed that early postnatal feeding with flavonoids from saperavi has beneficial effects on hippocampal related learning/memory mechanism and this was in correlation with changes in the dynamic of postnatal structural formation of the hippocampus. The aim of the present work was to investigate the effects of early life exposure to flavonoids from saperavi (P7-P15, 25 mg/kg per day) on the electrophysiological properties of the pyramidal neurons in the CA1 region of the hippocampus. In vivo electrophysiological recordings were carried in rats. According to our preliminary data, early postnatal feeding of rats with flavonoids from saperavi increases the threshold for the generation of an electrically induced epileptic activity, and reduces frequency and duration of epileptiform discharges.

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.

nanuli.doreuli@tsu.ge

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