

## **Influence of flavonoids from Georgian endemic grape species Saperavi on age-related and scopolamine induced memory disturbance.**

**B. Chkhartishvili**, E.Mitaishvili, M.Alania, T.Kurasbediani, M. Chikovani, N. Doreulee  
e-mail: [Butsiko.Chkhartishvili@tsu.ge](mailto:Butsiko.Chkhartishvili@tsu.ge)

Biology Department, Iv. Javakhsishvili Tbilisi State University, University str., 0143 Tbilisi, Georgia

Flavonoids and related phenolics are historically part of the basic human diet. They are major constituents of fruit, vegetables and beverages, such as wine, tea, cocoa and fruit juices. Flavonoids have been identified as powerful antioxidants in vitro (Rice-Evans, 2001) and they may scavenge reactive oxygen and nitrogen species in the circulation (da Silva et al., 1998). According latest literature data (Vauzour et al., 2008) flavonoids exert a multiplicity of neuroprotective actions within the brain, including a potential to protect neurons against injury induced by neurotoxins, an ability to suppress neuroinflammation, and the potential to promote memory, learning and cognitive function. In this regard to evaluate potential of flavonoids of Georgian endemic grape species is under our intense interest.

By modified method of Zaprometov we have extracted the flavonoid rich fraction from the endemic grape species Saperavi. The influence of the extracted flavonoids on spatial memory of laboratory rats was investigated in the T-maze test.

Supplementation with flavonoids from Saperavi grapes (25mg/kg, daily, for 5 days) to adult rats (28-32 week old) led to significant reversals of age-related spatial memory decline. Furthermore, the dietary flavonoids from Saperavi grapes efficiently corrected scopolamine-induced memory disturbances in young rats (8 week old), while no alteration of dynamic of learning was observed in control group. The anti-amnesic effects of the flavonoid extract from Saperavi grapes compared to two other antioxidant flavonoids – quercetin (50mg/kg) and catechin (25mg/kg) or nootropic drug piracetam (200mg/kg) were more pronounced. In open field experiments no significant changes of emotional state were detected in the flavonoid-fed rats.

In conclusion, we suggest that dietary flavonoids from the Saperavi grapes have beneficial effects on hippocampal-related plasticity.

[1] C. Rice-Evans. *Curr Med Chem.*, 8 (2001) 797–807.

[2] D. Vauzour, G. Ravaioli, K. VafeiAdou et al. *Arch Biochem Biophys.*, 476 (2008) 145–151.

Supported by Shota Rustaveli National Science Foundation Grant 1-6/89.