

Flavonoids from Georgian grapes: biochemical specificity and physiological effects.

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Evidence suggests that flavonoids - a family of plant-derived polyphenolic compounds with potent antioxidant and free radical scavenging properties might have a positive impact on brain pathology and aging. 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. Multicomponent phenol content (flavonoid glycosides and aglycones) of this fraction was revealed by TLC and HPLC methods. 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. In biochemical experiments it was revealed that the flavonoid extract also effectively prevented age-related increase of quantity of malondialdehyde (final product of lipid oxidation) in the brain of adult rats. 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.

In conclusion, we suggest that dietary flavonoids from the Saperavi grapes have beneficial effects on hippocampal-related plasticity and the ability to increase antioxidant defenses of the rat brain.

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