

**The influence of early postnatal feeding of laboratory white rats with flavonoids from Georgian endemic grape species “Saperavi” on hippocampus related learning/memory processes**

Natia Cherkezishvili

Supervisor: Nanuli Doreulee

Flavonoids and other phenol compounds, which are mainly found in fruits, vegetables, in beverages such as wine, tea, cocoa and fruit juice play an important role in the human diet. Flavonoids are powerful antioxidants and are characterized by scavenging of wide range of reactive oxygen and nitrogen. Flavonoids can easily pass through the blood brain barrier and they have ability to accumulate in the brain structures, especially in the cortex and hippocampus, thus they can participate in the hippocampus-dependent memory functions. According to the recent literature, flavonoids in the brain show a wide range of neuroprotective activities. They effectively protect neurons from injuries induced by toxins, inhibit the inflammatory processes in the brain and positively affect learning/memory, general cognitive functions.

The aim of our work was to determine the effects of flavonoids from Georgian endemic grape species Saperavi on aging-related changes in hippocampus-dependent spatial memory functions in laboratory white rats. In the previous biochemical experiments flavonoid rich fraction isolated from “Saperavi” revealed multicomponent phenol content and antioxidant capacity.

Behavioral experiments were planned on laboratory rats, to define the effects of flavonoids from Saperavi grape species on learning/memory ability and emotional state of rats. The administration of flavonoids occurred in early postnatal (P7-P15) period. The open field, T-maze and passive avoidance tests were carried out in 8-10 week old rats to assess emotional state, fear level defensive reactions and memory/learning ability of animals.

Analyses of experimental data's show that supplementation of rats with flavonoids from the Saperavi grapes during early postnatal period causes changes in motor activity and emotional state and have beneficial effects on learning dynamics.