Comparison of *Salvia miltiorrhiza* and *Salvia przewalskii* extract treatment on ethanol voluntary intake and cognitive functions in Warsaw high-alcohol preferring and Warsaw low-alcohol preferring rats

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It is known that extract from root of *Salvia miltiorrhiza* (SM) is involved in reducing alcohol intake in experimental animals (1). There are some suggestions that diterpenoid compounds isolated from the roots of SM (i.e. tanshinone IIA, miltirone) are responsible for antialcoholic effect of this herb (1). The paradigm showed especially by miltirone could be mediated centrally due to its anxiolytic profile via the benzodiazepine systems (2), but there are also data in which miltirone did not act against alcohol withdrawal signs (1). Moreover, tanshinone congeners can improve memory impairments induced by scopolamine on passive avoidance tasks (3). *Salvia przewalskii* (SP) is a next example from Salvia species, containing also diterpenes, although detailed phytochemical analysis based on 13 main lipophilic and hydrophilic compounds content showed that SP significantly differs from SM (4). Since chronic ethanol consumption is able to modify cognition, therefore the aim of this study was to compare an influence of SM and SP on association between alcohol consumption and changes in memory and motor functions of rats. The studies were performed on male Warsaw high-alcohol-preferring (WHP, n=36) and Warsaw low-alcohol-preferring (WLP, n=36) Wistar rats presented with a free choice paradigm between tap water and ethanol (10% (w/w) solution) for 2 months with one 2-week withdrawal period similarly as in our previous report (5). This procedure led to confirm the existing difference in alcohol intake between WHP and WLP animals (6.0±0.3 and 1.2±0.1 g/kg/day, respectively). After second 2-week withdrawal period the procedure was continued, whereas the rats were divided in 6 groups and treated with the hydroalcoholic (1:1) extracts from root of SM and SP (150 mg/kg, p.o.) or 5.0% Tween 80 (vehicle) for 28 consecutive days. Next, 60 min after last SM or SP administration rats’ spontaneous activity, motor coordination, short and long term memory were assessed using actinometer, “chimney test”, object recognition and passive avoidance tests, respectively. It was found out that the SM and SP significantly (ANOVA followed by Duncan post hoc test, p<0.01) lowered the alcohol intake (23 % and 25%, respectively) in WHP but not in WLP groups, whereas the extracts did not affect a total fluid intake of WHP and WLP rats. WHP vehicle-treated rats showed impairment of long term memory (64%, especially 48 h after aversive foot-shock), when compared with WLP counterparts (Kruskal-Wallis followed by Dunn test, p<0.05). The effect seemed to be specific, since there were no differences between both groups in their short term memory, spontaneous activities and motor coordination. After SM or SP administration neither impairment nor enhancements of behavioral and cognitive functions have been found in WHP and WLP groups. In conclusion, SM and SP produce the similar lowering drinking behavior in WHP rats, whereas their interaction with alcohol does not show any alteration in memory and motor functions.

This work was supported by National Science Centre grant N405678040.

References:


