

Evaluation of nootropic effects of galantamine and sildenafil as a combination in mice

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Cognitive decline is one of the age related mental problems and a characteristic symptom of various neurodegenerative disorders. Nootropic effects of combination of sildenafil and galantamine was evaluated in different learning and memory paradigms *viz.* Elevated plus maze (EPM) and Morris water maze (MWM) against scopolamine induced cognitive impairment. Moreover, the influence on central cholinergic activity via estimating the whole brain acetylcholinesterase enzyme was also assessed. Sildenafil (8 mg/kg, i.p.) and galantamine (3 mg/kg, i.p.) were administered *per se* to Swiss albino mice for successive 14 days. In addition, combination of sildenafil (4 mg/kg, i.p.) and galantamine (1.5 mg/kg, i.p.) were administered. Scopolamine (1 mg/kg, i.p.) was used to induce amnesia. Inflexion ratio and time spent in target quadrant were determined in EPM and MWM, respectively. Further, whole brain acetylcholinesterase enzyme was estimated through Ellman's method. Treatment with sildenafil and galantamine combination significantly increased inflexion ratio and time spent in target quadrant in EPM and MWM, respectively. Combination treatment also showed reduction in brain acetylcholinesterase enzyme activity when compared separately against sildenafil and galantamine *per se*. The present study results suggest the augmentation of benefits of galantamine and sildenafil combination in the treatment of cognitive impairments.

Keywords: Acetylcholinesterase activity, Cognitive impairment, Elevated plus maze (EPM), Inflexion ratio, Learning and memory, Morris water maze (MWM)

Cognitive impairment is a major health problem in ... inhibitors already in clinical use for the treatment of