Abstract

Alzheimer's disease (AD) is progressive and age-related neurodegenerative disease, leading cause of dementia accounting for 50%–60% of memory impairment cases in persons over 65 years of age. The present study aims to evaluate the neuroprotective effect of pharmacologically important *Adiantum raddianum* (AR) in the scopolamine (1mg/kg) induced mouse model of AD. Aqueous fronds extract (AqAR) was prepared and characterized using Gas chromatography-mass spectrometry (GC-MS) analysis. Four groups (n=6 each) were formed; control, scopolamine treated, Donepezil + Scopolamine and AqAR +Scopolamine. The healthy control mice received water and vehicle, AD mice received Scopolamine (1 mg/kg diluted in 0.9% saline for 8 days, injected intraperitoneally, Positive control group received donepezil (5mg/kg, orally) and scopolamine, Experimental group received AqAR 100 mg/kg, orally during 8 consecutive days, 30min prior to scopolamine administration. Mice were trained in Morris Water Maze (MWM) test to acquire memory and Y maze test was performed for spatial short-term memory. Mice brain hippocampi were procured following behavioral monitoring and histopathology through hematoxylin & eosin (H&E) stain was performed. GC-MS profiling revealed 21 phytochemical constituents. The number of alterations in Y-maze test was significantly reduced in scopolamine treated mice comparing to control, and higher alterations were observed in experimental group. However, no significant difference was observed in time spent in one arm and number of entries in treatment group comparing to control. Scopolamine treated group shows the significantly increase in escape latency time and decrease in time spent in target quadrant, while AqAR treated group revealed significant rescue of memory in MWM test. Increased neurodegenerative sign observed in scopolamine treated mice were prevented in AqAR treated mice. Collectively, current experiment data furnishes the neuroprotective capacities of AR and beneficial effect on memory functions of scopolamine induced AD mice.