Ameliorative Effects of the Lyophilized Aqueous Seed Extract of *Buchholzia coriacea* on Scopolamine-Induced Memory Impairment in Sprague-Dawley Rats

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ABSTRACT

This study investigated the protective effects of lyophilized aqueous seed extract of *Buchholzia coriacea* (*B. coriacea*) in enhancing memory and neuroprotection in scopolamine-induced learning and memory impairment using Morris water maze and Y maze. Thirty-five adult male Sprague Dawley were divided into five groups (n=7) according to extract/drug administered. 14 days administration of two different doses (100 and 200 mg/kg) of lyophilized extract of *B. coriacea* seeds, donepezil (5 mg/kg) concomitantly with scopolamine (1 mg/kg i.p) was carried out. Assessment of Morris water and Y-maze tests, oxidative stress markers and histology demonstration (H and E stain) were carried out during and after administration to evaluate the memory enhancing activity of the lyophilized extract of *B. coriacea* seeds on scopolamine-induced memory impairment. The two doses of lyophilized extract of *B. coriacea* seeds, and especially the 200 mg/kg significantly decreased escape latency and increased number of crossing for Morris water maze, while spontaneous alternation was also increased in the Y maze compared to scopolamine only treated group. The extract increased the activity of superoxide dismutase, reduced glutathione and catalase while decreasing malondialdehyde. The extract mitigated the histological evidence of neurodegeneration observed induced by the use of scopolamine. In conclusion, lyophilized aqueous seed extract of *B. coriacea* poses to be a promising therapeutic agent for the treatment of cognitive dysfunction in addition to its already established medicinal properties.

**Key words:** Scopolamine, *Buchholzia coriacea*, Memory loss, Neurodegeneration, Oxidative stress

INTRODUCTION

Cognitive impairment is associated with stress, ageing, and neurodegenerative diseases including Alzheimer’s (Shenkin et al. 2014; Ruano et al. 2019). Dementia, associated with neurodegenerative disorders have been reported to affect about forty eight million people globally (Feigin et al. 2019; Launer 2019). Decline in cognitive function as observed in dementia have been strongly linked to deficit of acetylcholine in the brain possibly to degeneration of cholinergic neurons in the hippocampus (Gu et al. 2015; Oz et al. 2016). Scopolamine (hyoscine hydrobromide), a muscarinic acetylcholine receptor antagonist, has been reported to induce learning and memory impairment through the cholinergic neuronal system similar to
REFERENCES


