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Original Article

Neuroprotective Activity of *Sesbania grandifolara* Seeds Extract against Celecoxib induced Amnesia in Mice

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ABSTRACT

Background: Sesbania grandiflora are characterized by their high anti-oxidant properties. The degeneration of neurons in Alzheimer disease mainly occurs because of high production of free radicals. However, the impact of *Sesbania grandiflora* on cholinergic system and oxidative stress parameter has not been investigated. **Aim:** The present study was designed to evaluate the neuroprotective effect of ethanolic extract of *Sesbania grandiflora* seeds in mice. **Materials and Methods:** The seeds of *Sesbania grandiflora* were powdered and subjected to successive extraction in Soxhlet apparatus. The different doses of ethanolic extract of *Sesbania grandiflora* seeds were evaluated for its neuroprotective activity against celecoxib induced amnesia in mice. **Result and Conclusion:** Phytochemical analysis of various extracts of *Sesbania grandiflora* revealed the presence of steroid, saponin, flavonoid, tannins and phenolic compounds. The ethanolic extract of *Sesbania grandiflora* significantly improves the memory of mice and reestablishes the amnesia induced by celecoxib. In addition to improvement in memory the extract treatment also decreases the activity of AchE and MDA and restore the antioxidant enzyme SOD, GSH and catalase in experimental animals. The results of our study showed that ethanolic extract of *Sesbania grandiflora* improve the cognition dysfunction in celecoxib treated mice through the modification in cholinergic system or by the blockage of oxidative stress and inhibition of AchE enzyme.

Key words: Acetylcholine, Celecoxib, Free radical, Morris water maze, *Sesbania grandiflora*

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INTRODUCTION

Alzheimer's disease (AD) is one of the most common form of dementia in which the neural injury is primarily in the hippocampus and cortex[1] characterized by memory loss, language deterioration, poor judgment, impaired visuospatial skills etc.[2] According to World Health Organization report 44 million of people are suffering from dementia worldwide, estimated that by the year 2050, 135 million of people will have dementia.[3,4] The treatment of mild moderate stage of AD is only symptomatic[5] however their authorized medications have disadvantages including extreme peripheral and central side effects, including git disturbance, insomnia, anxiety and depression.[6] The unwanted side effects caused by authorized medications used to treat AD have constrained researcher to research more secure AChE inhibitors from natural sources. Natural products always have been used as a primary source of medicine from ancient time for the treatment of disease and injury. Still today in many developing country of World, huge number of population using medicinal plants for the treatment of neurodegenerative disorder.[7,8]

Sesbania grandiflora (SG) is a fast growing, small soft wooded tree, belongs to family papilionaceae. Every part of SG is utilized for medicine in diuretic, emetic, fevers, headaches, smallpox, anemia, bronchitis, inflammation, leprosy, gout, rheumatism, antiarthritic, anticonvulsive, hepatoprotective and potent antidote for tobacco and smoking-related disease.[9-11] Seeds of SG are possessing intellectual memory enhancer activity.[12]

MATERIALS AND METHODS

Animals

In the present study, all the experiment was carried out using aged male Swiss albino mice weighing between 30-35g were used. The animals were housed under standard conditions of temperature (24±2°C) and relative humidity (30-70%) with a 12:12h light-dark cycle. They were maintained on standard pellet chow diet (Ashirwad Industries Private Ltd. Ropad, India) and water *ad libitum*. The experimental protocol was approved by the Institutional Animal Ethical Committee (GLAIP/IC/CPCSEA/IAEC/2016/86) and the care of animals was taken as per the standard guidelines of CPCSEA.

Drug and Chemicals

Piracetam was purchased from UCB India Pvt. Ltd., India [(2-oxo-1-pyrrolidinyl) acetamide] and ace-

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