EDITORIAL

Phytonutrients of Bacopa Monnieri reduces anxiety and stress in Depressed individuals

NAVEED SHUJA
Associate Professor Biochemistry Department, Lahore Medical & Dental College, Lahore
Email; rananaveedshuja@gmail.com cell# +923334205687

BACOPA MONNIERI

INTRODUCTION

Bacopa monnieri is a perennial, creeping herb native to the wetlands of southern and Eastern Pakistan, India, Australia, Europe, Africa, Asia, and North and South America. It is known by the common names water hyssop, brahmi, thyme-leafed gratiola, herb of grace, and Indian pennywort[2].Bacopa monnieri (BM), a perennial creeping plant belonging to the family Scrophulariaceae, is majorly found in wet, damp, and marshy areas throughout sub-continent[3]. BM popularly known as Brahmi, a name derived from the Lord Brahma, the creator god of the Hindu pantheon of deities, finds special mention in the Ayurvedic literature for its use in different mental conditions such as anxiety[2,3], poor cognitive abilities, and lack of concentration. Studies have also documented its potential as a therapeutic candidate for mental illness and epilepsy. Major active constituents of BM include v saponins such as d-mannitol and hersaponin, acid A, and monnierin. Bacoside A also possesses enhanced antioxidant defense system and memory-enhancement activity as well as could be utilized as nootropics[2,9]. These herbals work through activation of various pathways to improvise memory and learning abilities that may bring some symptomatic relief to Alzheimer's patients following dementia in the early stages of the disorder[2].

Photochemistry: The pharmacological properties of Bacopa monnieri were studied extensively, and the activities were attributed mainly due to the presence of characteristic saponins called "bacosides" Bacosides are a complex mixture of structurally closely related compounds, glycosides of either jujubogenin or pseudojujubogenin. Bacosides comprise a family of 12 known analogs. Major bacopasaponins were bacosides A3, bacopaside II, bacopaside I, bacopaside X, bacopasaponin C, bacopaside N2 and the minor components were bacopasaponin F, bacopasaponin E, bacopaside N1 bacopaside III, bacopaside IV and bacon aside V[3,6,7].

Four cucurbitacins, bacitracin A-D, a known cytotoxic, cucurbitacin E and three phenylethanoid glycosides, monnieraside I, III and plant inside B were isolated from the aerial part of Bacopa monnieri [13]. Two common flavonoids, luteolin, and apigenin, have also been detected in B. monnieri [14]. A simple reversed-phase HPLC method has been developed and successfully analyzed for the simultaneous determination of all 12 *Bacopa* saponins present in the extracts of B. monnieri[12](10).

Pharmacological Activity: Demands of the scientific community have necessitated experimental evidence to underline the medicinal importance of Bacopa monnieri further. Taking a cue from the traditional ethnomedicinal use of this highly valuable plant, scientific studies have been designed and conducted to pharmacologically validate these claims. *Bacopa monnieri* has been found to possess significant anti-depressant activity, anti-anxiety[2,3] anti-convulsant, anti-cancer, anti-inflammatory, antioxidant, anti-bacterial, anti-fungal, anti-ulcer, anti-diarrheal, anti-hypertensive, analgesic and anti-toxicity activity[4].

Anti-depressant and Anti-anxiety activity: Psychiatric disorder is a life-threatening illness that affects millions of people worldwide. Depression can lead to suicide. Studies carried out by researcher suggest the antidepressant property of Bacopa monnieri[8,7,6]. Significantly reduced escape latency and plasma corticosterone level along with the significant restoration of body weight among the stressed rats has been observed on acute treatment with Bacopa monnieri extract. Such properties of *Bacopa* extract coincides with the effects of well-accepted antidepressant drug fluoxetine hydrochloride and prominently forecast the antidepressant property of Bacopa monnieri in stress-related neuropsychiatric disorders[4,3,10]. Different doses of Brahmi exhibited antidepressant activity in mice in forced swimming test (FST), and shock-induced depression (SID) models. Anti-depressant property comparable with standard anti-depressant drug imipramine of the alcoholic extract of Bacopa monnieri in human trials[8].

REFERENCES

1. Khan AV, Ahmed QU, Shukla I and Khan AA: Anti-bacterial efficacy of Bacopa monnieri leaf extracts against pathogenic bacteria. Asian Biomed 2018; 4(4): 651-655.
2. Shukla SD, Bhatnagar M and Khurana S: Critical evaluation of Ayurvedic plants for stimulating an

intrinsic antioxidant response. Front Neurosci 2012; 6: 112.
3. Singh AG, Kumar A and Tewari DD: An ethnobotanical survey of medicinal plants used in Terai forest of Western Nepal. J Ethnobiol and Ethnomed 2012; 8: 19.
4. Rout SD and Panda SK: Ethnomedicinal plant resources of Mayurbhanj District, Orissa. Indian J Tradit Know 2010; 9(1): 68-72.
5. Bhowmik D, Chiranjib, Tiwari P, Tripathi KK and Kumar KPS: Traditional Indian memory enhancer herbs and their medicinal importance. Ann Biol Res 2019; 1(1): 41-46.
6. Shah A, Marwat SK, Gohar F, Khan A, Bhatti KH, Amin M, Din NU, Ahmad M and Zafar M: Ethnobotanical study of medicinal plants of Semi-Tribal Area of Makerwal&GullaKhel (Lying between Khyber Pakhtunkhwa and Punjab Provinces), Pakistan.Am J Plant Sci 2013; 4: 98-116.
7. Shah GM, Abbasi AM, Khan N, Guo X, Khan MA, Hussain M, Bibi S, Nazir A and Tahir A: Traditional uses of medicinal plants against malarial disease by the tribal communities of Lesser Himalayas - Pakistan. Journal Ethnopharmacol 2014; 155(1): 450-62.
8. Mukti M and Rahmatullah M: Treatment with aquatic plants by a Bagdi tribal healer of Rajbari District, Bangladesh. AncSci Life 2013; 33 (1): 22-26.
9. Upasani SV, Beldar VG, Tatiya AU, Upasani MS, Surana SJ and Patil DS: Ethnomedicinal plants used for snakebite in India: a brief overview. Integ Med Res 2017; 6: 114-30.
10. Patel DK: Regeneration of *Bacopa monnieri* (L.) Pennell in Herbal garden. J Med Plants Stud 2015; 3(6): 12-15.