

## A Qualitative Study on the Phytochemical Profiling of *Bacopa monnieri* with Organic Solvents

Divya MS<sup>1\*</sup>, Dr. Sreeja J<sup>2</sup><sup>1</sup>Ph.D. Scholar, PG & Research Department of Zoology, Sree Narayana College, Kollam-691001, Kerala, India<sup>2</sup>Sree Narayana College for Women, Kollam-691001, Kollam-691001, Kerala, India

### Original Research Article

**\*Corresponding author**

Divya MS

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**Abstract:** *Bacopa monnieri* or Brahmi (family- *Scrophulariaceae*) used in indigenous medicine as nerve tonic and cardio tonic possess diuretic, adaptogenic, antioxidant, antidepressant, antibacterial properties, enhances cognition profoundly flourishes in the marshy regions. Preliminary phytochemical tests carried out using aqueous, ethanol and methanol extracts revealed the presence of phytochemicals like amino acids, alkaloids, carbohydrates, glycosides, flavonoids, phenol, saponins and tannin accounted for its medicinal aspects in organic solvents.

**Keywords:** *Bacopa monnieri*, diuretic, adaptogenic, antioxidant, antidepressant, antibacterial, cognition.

### INTRODUCTION

*Bacopa monnieri* proliferate throughout the low lying water logged regions especially India, Nepal, Srilanka, China, Pakistan, Taiwan, Vietnam, Florida, Hawaii and United states was primordially described in the 6<sup>th</sup> century A.D [1, 2]. Sushruta Samhita employ this herb to prepare Tikta rasa and Medya rasayana [3]. This non-aromatic herb is well protected in the Bandhavgarh National Park (India), widely used to improve memory and alleviate mental ailments.

Ancient scholars even consumed it as a memory booster to recollect and memorise sacred rhymes and scriptures. In indigenous system of medicines especially Ayurveda used it to treat epilepsy, asthma, ulcers, tumours, ascites, enlarged spleen, inflammation, leprosy, anaemia, gastroenteritis [4, 5].

Recently they are engaged as aquarium plant. Brahmi acquired such broad medicinal qualities due to its association of phytochemicals. They are secondary metabolites offering general protection to the entire plant found to vary in plant parts attributed the medicinal curative properties of this succulent herb. In this context our work aiming to qualitatively evaluate the phytochemicals in the entire plant body using aqueous, ethanol and methanol solvents.

### MATERIALS AND METHODS

#### Collection and processing of plant material

The entire plant procured from a marshy place of Ashtamudi in Kollam district, Kerala, India was

cleaned thoroughly by repeated washing subjected to dry in the shade. The dried material was grinded to fine powder retained in a tight container for further tests. Later the powdered sample were extracted with three solvents (aqueous, ethanol and methanol) using separating funnel. Their extractive yield was estimated using the equation  $W_2/W_1 \times 100$ , where  $W_2$  = net extract expressed in gram after extraction and  $W_1$  = total weight taken for extraction. The stock solution prepared by dissolving 1gm of crude extract in 100ml of its mother solvent were subjected to the screening tests [6] mentioned in Table-1.

Table-1: Showing the list of phytochemical tests performed.

Constituents	Test
Alkaloids	Mayer's test Wagner's test
Amino acids	Ninhydrin's test
Carbohydrates	Molisch's test
Flavanoids	Shinoda's test Ferric chloride test
Glycosides	Legal's test
Phenols	Ferric chloride test Litmus test Sodium bicarbonate test
Saponins	Foam test
Tannins	Braymer's test

## RESULTS AND DISCUSSION

Phytochemicals like amino acids, alkaloids, carbohydrates, glycosides, flavonoids, phenol, saponins

and tannin though varied qualitatively (Table-2) were evident in three solvents also represented.

Table-2: Showing the results of phytochemical screening.

Constituents	<i>B. monnieri</i>		
	Aqueous extract	Ethanol extract	Methanol extract
Alkaloids	***	***	**
Amino acids	*	**	**
Carbohydrates	*	**	***
Flavanoids	*	**	**
Glycosides	*	**	***
Phenols	**	***	***
Saponins	***	**	**
Tannins	**	**	***

Key: \* Trace, \*\*Present, \*\*\* Excess

With its immense bulky secondary [7, 8]. The healthiness of detoxifying organ liver can be nurtured by its active compounds [9]. The optimum supplementation of brahmi avert the brain damage induced by Neonatal hypoglycaemia [10]. With its efficacy decreases the depression, drug addiction and toxic effect imparted by pain relievers [11, 12]. The strong antioxidant activity [13] executed by the plant protects the damage caused by free radicals hence play a protective role in cells and kidney [14, 15]. Research work suggested they could activate choline acetyl transferase action which simultaneously increases the cerebral blood flow [16] with a profound role in maintaining normal blood pressure [17] also assist hair growth. Only mild toxic effect reported in humans include nausea with gastrointestinal upset [18, 19].

## CONCLUSION

By considering the medicinal impacts of brahmi, we strongly recommend its consumption in the wild fresh form with optimum dosage for better health.

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