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PHYTOCHEMICAL ANALYSIS AND PHARMACOLOGICAL STUDY OF MEDICINAL PLANT *BASELLA ALBA* L.

P. M. Khadse
Associate Professor
Department of Botany
Shri R. L. T. College of Science, Akola, Maharashtra, India

Abstract: *Basella alba L.* is considered one of the best tropical spinaches throughout the tropical world. *Basella alba L* is one of the wild leafy vegetables, which is rare in its natural habitat but now a days it is an important leafy vegetable grown for its nutritive value, Malabar spinach is extremely heat tolerant and fast-growing perennial vine which is wildly cultivated as a cool-season vegetable. Fruits are fleshy, stalkless, spherical and purple in colour. The effect of Basella alba as an anti-ulcer agent, CNS depressant activity of all the extracts of B. alba was evaluated by pentobarbitone induced sleeping time test, open field test and hole cross test in mice Tropical spinach

Key words: - Tropical spinach, Malbar spinach, CNS depressant

a) Introduction:

Origin of *Basella alba* L is India and Indonesia and it naturally has grown in tropical Asia and tropical Africa (Saroj et al 2012). *Basella alba* L. is particularly abundant in Malaysia, Philippines, tropical Africa, the Caribbean and tropical South America (Palada and Crossman, 1999), Southeast of Brazil (Echo plant information sheet, 2006). Due to easy adaptation to a variety of soils and climates *Basella alba L.* is considered one of the best tropical spinach throughout the tropical world (Palada and Crossman,1999). *Basella alba L* is one of the wild leafy vegetables, which is rare in its natural habitat (Wambugu and Muthamia, 2009) but now a days it is an important leafy vegetable grown for its nutritive value (Varalakshmi and Devaraju, 2010) throughout the temperate regions as an annual and the tropics as a perennial (Bamidele *et al.,* 2010, Echo plant information sheet, 2006). Almost in every part of India, *Basella* is grown as a pot herb (Khare, 2007).

Basella alba belongs to *Basellaceae* family. Malabar spinach is extremely heat tolerant and fast-growing perennial vine which is wildly cultivated as a cool-season vegetable. Fruits are fleshy, stalkless, spherical and purple in colour. In India, it is commonly known as "Poi" found all over the country, except hills. In Ayurveda Malabar spinach is called as "Upodika", "Potaki", "Malvaa", "Amritvallari", and in Siddha/Tamil as "Vaslakkirai" (Khare, 2004). The plant is a succulent, branched, smooth, twining and herbaceous vine reaching a length of several meters. The stems are green or purplish. The leaves are heart- shaped (cordate leaves), 5 to 12 cm in length, stalked with a pointed tip (Harold, 1963).

Pharmacological Study

Anti-inflammatory activity: The methanolic extract of B. alba (MEBa) and aqueous extract of B. alba (AEBa) were studied for its in vitro anti-inflammatory activities. The potency of the extracts was compared with standard Diclofenac sodium (50 and 100 µg/ml). The aqueous extract showed the most significant membrane stabilizing action on human red blood cell membrane (Vijender et al., 2011).

Anti-ulcer activity : The effect of Basella alba as an anti ulcer agent has studied resulted that, aspirin altered parameters like ulcer index, percentage of ulcer inhibition, gastric pH, pepsin content, thiobarbituric acid reactive substances, lipid hydro peroxidases, SOD, GPX, CAT, GSH, vitamin C, and vitamin E were restored by the treatment of Basella alba leaf extract and indicated its anti ulcer activity.

Wound healing activity :

Mohammed et al., (2012) studied wound healing capacity of Basella alba, in male albino rats. They created burn wounds on the back of rats and treated them with Basella alba leaf extract in glycerine for about 20 days. Their results concluded that, rats treated with aqueous leaf extracts showed a maximum wound healing capacity with significant wound closure and indicated wound healing capacity of Basella alba.

Cytotoxic and Antibacterial activity:

The methanolic extract shows the significant growth inhibition on human cancer cell lines and momentous zone of inhibition for microorganisms studied. The overall result of this study indicates that the methanolic extract from B. alba have interesting anticancer and antibacterial properties,

CNS depressant activity:

Petroleum ether, methanol and aqueous extracts of dried aerial parts of B. alba were studied. CNS depressant activity of all the extracts of B. alba was evaluated by pentobarbitone induced sleeping time test, open field test and hole cross test in mice.

Antioxidant activity :

B. alba fruit with dark blue skin and deep red violet flesh Kumar et al.57 is a potential source of natural colorant .This study were aimed to evaluate the total betacyanin content, total phenol and to analyse the antioxidant activity

b) Materials and Method

Basella alba leaves are collected from home garden were analysed for their phytochemical constituents. The fresh leaves were air dried until constant weight at room temperature. The dried samples were pulverized into fine powder .About 100g of powder material was extract in distilled water, methanol, petroleum ether solvent using maceration. The samples were left to extract for 24 hr.

Qualitative analysis Methods:

1) Test for Alkaloids:

Weight about 0.2 g of plant extract in separate test tube. Add warm with 2% sulfuric acid for 2min.It was filtered in separate test tube. Add few drop of Dragendroff reagent in it. Observed for the presence of orange red precipitate for the presence of Alkaloids.

2) Test for Tannin:

Take 1ml of plant extract. Add 2ml of Distilled water in it. Heat it in the water. Filter it and add 5% Ferric Chloride in it. Observed for the presence of dark green black colour precipitate for the presence of Tannin.

3) Test for Phenol:

Take 1ml of plant exract. Add 2ml of Distilled water in it. Heat it in the water. Filter it and add 5% Ferric Chloride in it. Observed for the presence of dark green black colour precipitate for the presence of Phenol.

4) Test for Flavonoids:

Take 2ml of plant extract. Add 10% of NaOH in it. On addition of concentrated HCL yellow colour appearance get from. It confirm the presence of Flavonoids.

5) Test for Saponins:

Take 2ml of plant extract and add 1ml of 2 NaOH I it. Heat it for 5 min at 100 degree. Formation of bluish green colour indicates the presences of Saponins.

Quantitative analysis Methods

1) Phenols: The total phenolics in the extract were determined using Folin-ciocalteu method as described by Kulisic et al., (2004). To each sample solution (1.0 ml) and standard (Gallic acid) was added 5ml of Folin-ciocalteu and 4 ml sodium carbonate (7% w/v).

2) Tannins

Take 0.5 gm sample in 50 ml of distilled water, stir the solution for 1 hr. filter the mixture and take 5 ml of filtered sample in test-tube. To this add 2 ml of 0.1 M FeCly in 0.1 HCI and 0.008 M KaFc(CN) o.3H;0, Take the absorbance at 395 nm wavelength and record changes within 10 minutes.

3) Flavonoids

Take 10 gm of powdered sample and repeatedly extract il with 100 ml of 80% aqueous Methanol. Filter the solution and Lille rate is then transfered into a water bath for evaporation into dryness. The residue is weighed as flavonoid content.

4) Anthocyanins

Take 1ml of extract in test tube (supernatant) + 3ml of HCL in aqueous solution .Add 1ml of Anthocyanin reagent in it. Prepare blank will ml of methanolic and incubate it for 15 min in dark. Measure absorbance at 525 nm against blank.

5) Alkaloid

5ml powdered sample was mixed in 200 ml of 10% CH,COOH in C2H5OH (ethanol) the flask was covered and mixed well and allowed to stand for 4 hrs. Then filtered the mixture and collected filtrate is heated in a water bath until it reaches of the original value. To this, concentrated NHOH was added till the complete precipitation and the precipitate was collected and washed with dilute NH4OH. Then the solution was filtered and the residue was weighed as crude alkaloid content.

c) Results and Discussion

The percentage yield for the aqueous methanol extract of *Basella alba* are 5.6 % respectively. A previous study also reported that the leaf fraction of *Basella alba* had higher percentage yield. Phytochemical analysis shows presence of all secondary metabolites and all the properties of plant.

The aqueous methanol extract, distilled water extract, petroleum ether extract of *Basella alba* indicates the presence of alkaloid, Phenol, flavonids, tannin, Saponins. Quantitatively these secondary metabolites i.e. phenols found in higher quantity in three extract as compare to other phytoconstituent , tannin is present in high quantity in ME. Flavonoids is present in less quantity in PE. Alkaloids is also present in less quantity in aqueous .

Qualitative analysis Test

Table No. 1

Sr. No.	Phytochemical Test	Solvent Extracts		
		Methanol Extract	Distilled Water Extract	Petroleum Ether Extract
1	Test for Alkaloids	**+ve**	**+ve**	**+ve**
2	Test for Tannin	**+ve**	**+ve**	**+ve**
3	Test for Phenol	**+ve**	**+ve**	**+ve**
4	Test for Flavonoids	**+ve**	**+ve**	**+ve**
5	Test for Saponins	**+ve**	**+ve**	**+ve**

Quantitative analysis Test

Table No. 2

Sr. No.	Phytochemical Test in µg/mg	Solvent Extracts		
		Methanol Extract	Distilled Water Extract	Petroleum Ether Extract
1	Phenols	1.474	1.075	1.540
2	Tannins	0.681	0.604	0.640
3	Flavonoids	1.104	0.912	0.020
4	Saponins	0.343	0.268	0.329
5	Alkaloids	0.298	0.052	0.439

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