

## **A Bird View on Upodika (Basella alba Linn).**

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DOI: <https://doi.org/10.47071/pijar.2023.v08i03.02>

**Abstract:** Ayurveda is an ancient science which is having an aim of to maintain health of healthy person & to cure the diseased one. The aim of ayurveda is achieved by using medicinal plants Upodika is one among them. Upodika (Basella alba Linn.) is climber belongs to Basellaceae family. It is commonly known as Basale soppu in Kannada & Indian/Malabar spinach in English. It contains more water so it is called as Upodika. It is used as both food as well as medicine in day to day life. It has high nutritive value so it is cultivated at homes as a pot herb. Before using it as food as well as medicine we need some data regarding this herb so the small attempt has been done through this work. The aim of present review focuses on detailed botanical description, phytochemical constituents, medicinal uses & pharmacological studies of Upodika.

**Keywords :** Upodika, Phytochemistry, Pharmacological studies, Medicinal uses.

### **Introduction:**

*Upodikā* commonly known as *Basale soppu* in Kannada (local language, Karnataka, India) &

Indian/Malabar spinach in English which is botanically equated to *Basella alba* L. belonging to family Basellaceae, which is an extremely heat tolerant fast growing perennial vine. It is cultivated

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at homes as a pot herb because of its high nutritive value. It is further observed that two common species i.e., the red-stemmed *B. rubra* and the green-stemmed *B. alba* is found in India which are indistinguishable in taste.

*B. alba* is reported to contain several phytoconstituents such as proteins, alkaloids, carbohydrates, polysaccharides, phenols, flavonoids, carotenoids, minerals and vitamins. It is also an important ethnoveterinary medicinal plant used for the treatment of retained after birth and anaplasmosis and administered in balanitis and gonorrhoea. The mucilaginous liquid obtained from the leaves and tender stalks of this plant is a remedy for habitual headaches. A decoction of the leaves is a good laxative for pregnant women and children, apart from this, it was also reported that daily consumption of *B. alba* has a positive effect on total-body vitamin A stores in men.

*B. alba* is consumed in food preparations in southern India. In Ayurveda the drug is used for various indications either alone

or in combination to treat the diseases such as *Mada* (intoxication), *Anidrā* (insomnia), *Paādadari* (cracked feet), *Jvara* (fever), *Pravaāhikaā* (dysentery), *Arśhas* (haemorrhoids), *Śiātapitta* (urticaria), *Vranaśoṭha* (inflammatory), *Arbuda* (tumours), *Raktapitta* (bleeding disorders).

### Materials & Methods:

Review of various classical texts & Journals have been carried out to compile the medicinal properties of Upodika (*Basella alba* Linn.). In addition to this by the help of internet & Google search a comprehensive data has been generated & compiled here on Upodika.

### Basonym:

**Upagatam adhikam udakam  
asyaat iti I (Ni.A. Vol-1)**

Upodika contains more water so it is called as Upodika.

### Synonyms:

- 1) Amruta vallari – It is climber grows like guduchi.
- 2) Karkatapriya – It is mostly liked by monkeys.
- 3) Malava- It grows mainly in Malava Desha.

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- 4) Madagni – It cures the Madaroga.
- 5) Picchila- Leaves are thick and lubricate in nature.
- 6) Potaki- it is good for the body because it is having Brimhana action.
- 7) Vishaala – Having big leaves.
- 8) Vratra – It is having similar round shaped leaves.

- Sanskrit- Apodika, Niviti, Potaki  
Hindi-Poi, Poikivel, Sufedbachla.  
Kannada-Bilibasaleballi  
Bengali-Bampoi,Poi  
Tamil-Asalikkirai  
Malayalam-Basellakkira, Passalikera  
Punjab- Poi.  
Telagu-Batsalla, batschali,  
Peddabasala.  
Marathi-Mayalachivel, Mayalu  
Gujarat-Pothi

### Vernacular names:

English-Country spinach, Indian spinach, Malabar nightshade.

### Classification according to different literature.

Sl.No	Name of Samhita	Gana	Varga	Skandha
1	Charaka Samhita	-	Shakavarga	-
2	Sushruta Samhita	-	Shakavarga	-
3	AstangaHrudaya	-	Shakavarga	-
4	Madanpal Nighantu	-	Shakavarga	-
5	Shodala Nighantu	-	Guduchyadivarga	-
6	Raja Nighantu	-	Moolakadivarga	-
7	KaiyadevaNighantu	-	Oushadhivarga	-
8	BhavprakashaNighantu	-	Shakavarga	-
9	NighantuAdarsha	-	Vastukadivarga	-
10	PriyaNighantu	-	Shakavarga	-

### In Samhitas

#### In Charaka Samhita

Following are the references of *Upodika (Basella alba)*.



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- i. Yavagu prepared from the Upodika is advised as Madhanashini.
- ii. Upodika mentioned under Shakavarga.
- iii. Upodika is used as Leafy vegetable.
- iv. Upodika is used as Shaka Prayoga in Suskarshachikitsa.
- v. Upodika shaka with Badaramla and Takra in Raktaarshas, in CharakaArshaschikitsaAdhyaya.
- vi. Yusha prepared by Upodika and along with other drugs is mentioned in PravahikaChikitsa.
- vii. In case of Vataraktachikitsa, Upodika is used as Hitakara Shaka by Acharya Charaka in VatashonitaChikitsaAdhyaya.
- viii. In case of Parisravi Basti Vyapatchikitsa, Upodika shaka is mentioned as kalkadravya in Basti formulation.
- iii. In case of NadivrananearbyNetravartma and Guda for Eshana karma Upodika nala along with Karira nala is used.
- iv. After kshara karma for ArshasUpodika is consider as patya.
- v. In case of Dahajwara, Upodika along with Badara& Amalaka applied externally.

### In AstangaHrudaya

- i. Acharya Vagbhata mentioned Upodika under Shakavarga
- ii. Upodika relieves intoxication.
- iii. Upodika and Tila are Incompatible if they are taking together cause diarrhea.
- iv. Under Pakwatisarachikitsa, after Agnidipti, Patient is advised to have food which is prepared from Shali with yusha prepared from shaka varga drugs including Upodika.

### In Sushruta Samhita.

The following are the references of *Upodika (Basella alba)*.

- i. Acharya sushruta mentioned *Upodika* under shakavarga.
- ii. Upodika are advised not to be consumed after processing with Tilakalka.

### Vangasena

According to Vangasena in Kshudrarogadikara, Upodikaditaila in Padadari

**Chakradatta:**

Chakradatta mentioned it under ShlipadaChikitsaprakarana and KshudrarogachikitsaPrakarana.

Mentioned Upodika under shakavarga and explained about gunakarma and rogagnata.

- i. Upodikaswarasa in Arbuda external application.
- ii. Upodika is used as Upanahaswedadravya in MarmasthanaArbuda.
- iii. Upodikadiksharataila is applied in case of padadari.

**Raja Nighantu**

The author mentioned Upodika under *Mulakadivarga*, explained types and Gunakarma of Upodika in detail.

**In Nighantu Kala Amarakosha**

The author has mentioned Upodika under Vanoushadhivarga.

**Kaiyadeva Nighantu**

In this Nighantu The author mentioned Upodika under Oshadivarga and here he explained synonyms, and Guna karma of Upodika in detail.

**Vrandamadhav**

Author has mentioned it under the galagandachikitsa.

**Bhavprakasha Nighantu:**

- i. Upodikapatraswarasa is applied to arbuda type of furunculosis and being covered with patra of same.
- ii. Poultice of Upodika ground with kanji, takra, & mixed with lavana should applied on visible arbuda during daytime and during nights on arbuda which is grown over marmasthana.

- i. The author mentioned Upodika under shakavarga. Explained its synonyms and Gunakarma of Upodika.

- ii. Upodika moola kalka along with tilataila applied to vaginal walls in case of Prasavavilamba by

**Madanapala Nighantu**



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Bhavaprakasha in Yonirogadhikara.

### Nighantu Adarsha

The author mentioned Upodika drug under vastukadivarga and explained gunakarma in detail with therapeutic indications.

### Priya Nighantu

**Tableno-1.3 Showing the Rasa Panchaka of Upodika**

Sl.No	Name of Ni	Rasa	Guna	Veerya	Vipaka	Prabhava
1.	M.N	-	Snigdha, Picchila	Sheeta	Katu	-
2.	S.N	Kashaya, Madhura	Guru	Sheeta	Madhura	-
3.	R.N	Kashaya, Katu, Madhura	-	Ushna	-	-
4.	K.N	Madhura	Snigdha	Sheeta	Madhura	-
5.	B.N	Kashaya, Madhura	Snigdha, Picchila	Sheeta	Katu	-
6.	Ni.A	Kashaya, Madhura	Guru, Ruksa	Sheeta	Madhura	-
7.	P.N	-	Snigdha, Picchila	Sheeta	-	-

Doshghnata: Vatapittahara

Nighantukara mentioned Upodika in shakavarga and explained gunakarma

of Upodika.

### Vanoushadhichandrodaya

The Author mentioned paryayas, vernacular names, bheda, Gunakarma, and Amayikaprayoga of Upodika. indicated kusta, Atisara etc.

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Karma: Madanashini, Vrushya, Balya, Nidrajanana, Alasyakaraka, Akantya, Raktapittahara, Ruchya, Truptikara, Malabhedak, Brimhana.


Rogaghagnata: Raktapitta, Udarda, Vibandha, Pitika, Arbuda, Mada, Padadari.

Part used: leaves, stem, whole plant.

Dosage: 1- 3 gms.

### **Theurapetic administration**

#### **As AbyantaraPrayoga**

- 
- i. Gruel cooked with Upodika and curd pacifies narcosis(Mada).
  - ii. In bleeding piles, the Upodika cooked with sour Badara fruits and buttermilk is useful.
  - iii. In dysentery associated with pain and tenesmus due to retention of feces the leaves of Upodika cooked with curd and pomegranate seeds with ghee are used as vegetable.
  - iv. Pomegranate seeds fried in ghee and oil and spiced with coriander and ginger are used as vegetable. It acts as laxative in piles.
  - v. The juice of leaves are prescribed in case of constipation, particularly in children and pregnant women.
- i. Boils and tumors get pacified on being anointed with the juice of Upodika and covered with the leaf of the same.
  - ii. Poultice is applied on tumors with Upodika pounded with sour gruel and buttermilk and mixed with salt.
  - iii. Cracks in feet ;Upodikaditaila is prescribed in cracks of feet.
  - iv. For easy delivery Application within vagina of the paste of the root of Upodikā mixed with sesamum oil makes delivery easy.
  - v. Fever with burning sensation-The leaves of Upodika pounded with sour juice (or vinegar) are applied externally as paste.

#### **BahyaPrayoga**



**IMPORTANT FORMULATIONS:**

Upodikaditaila, Upodikadiksharataila, Upodika rasa prayoga, Upodikopanaha.

**Botanical review of Upodika:**

Latin name: Basella alba Linn.

Family: Basellaceae

**Taxonomy:**

Kingdom: Plantae

Divison: Tracheophytes

Sub-Divison: Angiosperms

Class: Eudicots

Order: Caryophyllales

Family: Basellaceae

Genus: Basella

Species: B.alba.

Scientific name: Basella alba Linn.

**Botanical description of Basella alba Linn.**

It is an Perennial, creeping or climbing herb, 2-10m long. Leaves are entire, broad-ovate to cordate or orbicular, 5-18cm in diameter, glossy, succulent. Stem is Angular, green, glabrous, multibranched, fleshy, or thin. Flowers in lax, axillary, peduncled spikes with white

to green fleshy perianth. Fruits are Utricles depressed-globose, shallowly lobed, 4-7mm X 5-10mm, white or greenish white, turning dark violet or black, containing violet juice.

Habitat: found wild throughout India.

Flowering from January-March.

**Agro-Techniques**

**Land Preparation**

The field should be prepared to make good seed-beds, by light ploughing followed by two harrowing before the onset on the monsoon season.

**Mode of Propagation**

It can be propagated by seeds, stem or root cutting.

**Nursery Raising:**

- In the northern and eastern plains of India, seeds are sown from March to May.
- In the southern parts, it is grown twice, once sown in June and again in October to November.
- Late spring or early summer season is the best time for sowing in the hills.
- Nearly seeds @ 12-15 kg will be



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required to sow a hectare land.

- Seeds can be treated with 0.3M potassium nitrate for 24 hours to enhance germination and vigour of seedling growth.

### **Transplanting**

- Seedling are transplanted when they can easily be handed in beds with 45cm spacing.
- The crop is also raised on bamboo stakes or trained in trellis where seeds are shown 20-25cm apart in rows at the base of bamboo stake or trellis.

### **Manure and Fertilizer**

- For getting good crop, rich soil are preferred and only nitrogenous fertilizer application has been found more beneficial.
- The mustard cake@50 kg nitrogen/ha produced the highest yield.
- Recommended doses of fertilizers for basella for northern parts of Karnataka is 350 kg nitrogen, 50 kg phosphorus and 50 kg potash/ha.

### **Irrigation**

- The crop in general requires 5 to 6 Irrigation when grown in summer

and frequency of Irrigation depends on the soil type.

- It requires uniform moisture supply for continuous growth.
- It may be advisable to irrigate the crop once in 4 to 5 days during hot weather and 7 to 8 days during cool season.

### **Inter culture**

- Basella is a small herbaceous shrub and, therefore, the competition with weeds during its initial stages of growth should be avoided by keeping the land free from weeds.
- The first weeding is done after about 20-30 days of planting.
- After this, one or two weeding's are done after 60 days of sowing to keep the weeds under control during the initial stages of crop growth. Later, weeding follows every harvest.

### **Pests and Diseases**

- Several diseases are reported to attack the crop but, the most important diseases affecting this crop are damping off (*Pythium amphanidermatum*), leaf spot (*Acrotheciumbasella*, *Fusarium maniliforme* and *Cercospora* spp.).

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- The removal of infested leaves and plants with rust diseases will help in controlling rust disease.

### Harvesting and Storage

- The leaves and stems are harvested after 8 to 10 weeks of sowing. After harvesting, the plants are dried under shade for 3-4 days before storage.
- The harvested crops is chopped into pieces, particularly the young herbaceous shoots, and dried by spreading under the shade or sun or on wire-racks, taking care to see that the dried leaves remain green.
- The harvested leaves are spread in thin layers and turned frequently while drying. The dried leaves are packed in gunny bags and stored in moisture free places.

### Production and Yield

A good crop gives yield nearly 130-150 quintals herbage/hectare.

### Marketing and Trade

The current market price of herb is Rs. 12-18 per kg.

### Folklore uses:

1. Daily consumption of *B. alba* has

a positive effect on total-body vitamin A storage in men (Haskell et al., 2004).

2. The paste of root of red *B. alba* along with washed rice water is taken in the morning on empty stomach for one month to cure irregular periods by the rural people of Orissa, India.

3. A paste of the root is applied to swellings and is also used as a rubefacient. The sap is applied to acne eruptions to reduce inflammation.

4. Decoction of leaves is used for its mild laxative effect.

5. In India, it has been used for anti pruritis and burns (Saikia et al., 2006), and has been used in Bangladesh for acne and freckle treatment (Akhter et al., 2008).

6. The Ayurvedic treatment in India used *B. alba* leaves and stem as anticancer such as melanoma, leukemia and oral cancer (Premalatha and Rajgopal, 2005). Roots and leaves has been used



for the removal of after birth, stomach pains and increase milk production (Pascaline et al., 2010).

7. *B. alba* is administered orally for the treatment of anal prolapsed or hernia. Ground leaves of *B. alba* are rubbed on the human hand the whole preparation introduce into animal's vagina every morning for the treatment of sterility (Chifundera, 1998).

8. *B. alba* has been used for the treatment of Anemia in women, coughs, cold (leaf with stem), and cold related infections (Rahmatullah et al., 2010).

9. Maceration is taken orally for infertility, pelvic inflammatory disease, orchitis, epididymitis, threatened abortion and spurious labour (Focho et al., 2009).

10. Leaves are used in constipation, poultice for sores, urticaria and gonorrhoea. It is also used in poultice local swellings, intestinal complaints etc (Yasmin et al., 2009).

11. The mucilaginous liquid obtained from the leaves and tender stalks of plants is a popular remedy for headaches.

**Phytochemistry:** The seeds were found to be rich in oleic acid. The fatty oil from seeds was found to contain palmitic, oleic, linoleic and linolenic acids. The proteins revealed presence of lysine, threonine, valine, methionine and leucine. The leaves were reported to contain vitamin K and quercetin. The minerals detected were oxalate, calcium and phosphorus, iodine and fluorine, iron and zinc. Arginine, isoleucine, leucine, lysine, methionine, threonine and tryptophan were the amino acids identified. The vitamins viz., thiamine, riboflavin, niacin, vitamin C and carotene were also reported. In a preliminary study, the leaves revealed presence of alkaloids, flavonoids, saponins and tannins.

#### PHARMACOLOGICAL ACTIVITIES:

Wound healing activity, Antimicrobial activity, Antiviral activity, Anti

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inflammatory activity, Anti ulcer activity, CNS Depressant activity, Androgenic potential Hepatoprotective activity, Antidiabetic activity, Antioxidant activity.

### SUBSTITUTE

1. *Ludwigia hypssopifolia* (Don)Excell (Family- Onagraceae)
2. *Ludwigia octovalvis*(Jacq) Raven (Family – Onagraceae)
3. *Ludwigia peruviana*(Linn)H.Hara. (Family – Onagraceae)

**Discussion:** plants are the boon to the mankind. Upodika (*Basella alba*.Linn) is one among them it is used as both food as well as medicine. It is cultivated at homes as a pot herb because of its high nutritive value. It is further observed that two common species i.e., the red-stemmed *B. rubra* and the green-stemmed *B. alba* is found in India which are indistinguishable in taste. *B. alba* is reported to contain several phytoconstituents such as proteins, alkaloids, carbohydrates,

polysaccharides, phenols, flavonoids, carotenoids, minerals and vitamins. It is also an important ethnoveterinary medicinal plant used for the treatment of retained after birth and anaplasmosis and administered in balanitis and gonorrhoea. *B. alba* is consumed in food preparations in southern India. In Ayurveda the drug is used for various indications either alone or in combination for diseases such as *Mada* (intoxication), *Anidrā* (insomnia), *Pāṇḍarī* (crackedfeet), *Jvara* (fever), *Pravāhika* (dysentery), *Arśhas* (haemorrhoids), *Śīṭapitta* (urticaria), *Vranaśoṭha* (inflammatory), *Arbuda* (tumours), *Raktapitta* (bleeding disorders).

**Conclusion:** Upodika is mentioned in almost all the classical texts & in the Nighantus as vegetable. It is easily available plant specially in rainy season. It can cure almost all the diseases and also helps in maintaining health. It is rich in nutritive value So recommended for daily usage as a food in the form of rasam, chatney, parotta etc. Ayurveda recommends *Basella* in the treatment of



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several conditions such as anemia, cough, dysentery and diarrhea and as a poultice and in the treatment of mouth ulcers in south India.


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**Conflict of Interest : None declared**