

A REVIEW ARTICLE OF BISHERI BOOTI (AERVA LANATA) -ITS TRADITIONAL USES AND PHARMACOLOGICAL ACTIONS

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ABSTRACT

Herbs are the part of the Nature and have no substitute. Medicinal herbs have the special importance due its use for the treatment of numerous ailments since ancient times and gained popularity over conventional medicines owing to their reduced risk of side effects, effectiveness in chronic conditions, lower cost and widespread availability. *Aerva lanata* one of the such boon among the diverse medicinal herbs, belongs to the family Amaranthaceae, ordinarily known as Bisheri Booti comes under the most widely used herbs in

lifestyle disorder as well as in metabolic syndrome. Numerous research work and literature have proven that it is commonly used as a therapeutic agent for a variety of diseases such as Anti-diabetic, Anti-microbial, Hepatoprotective, Diuretic, Emollient, Hypolipidemic, Lithotriptic, Nephroprotective etc., The present review highlights the traditional uses, therapeutic and pharmacological action in the light of available preclinical and clinical data.

KEYWORDS: Hepatoprotective, Nephroprotective, Lithotriptic, Hypolipidemic, Emollient.

INTRODUCTION

Aerva lanata (Linn.) is one of the important medicinal herbs, belongs to the family Amaranthaceae and is found throughout tropical India. Numerous research work and literature have proven that it is commonly used as a therapeutic agent for a variety of diseases. Karnich (1972) stated it as an anti-hyperglycemic^[1], Bedi (1978) reported that its root is used in headache, scabies, cough.^[2] Yoganarasimhan *et al* (1979) described that it is used as a hemostatic during pregnancy.^[3] Singh and Pandey (1980) reported as anti-inflammatory used in headache and skin diseases.^[4] Hemadri *et al* (1980) claimed it as

diuretic.^[5] Shah and Gopal (1985) reported, it is used in bronchitis^[6], John (1984) for uterus clearance after delivery.^[7] Afaqet *al* (1991) has documented that it can be used for controlling kidney disorder, diabetes and is useful in the treatment of lithiasis, cough, sore throat and wounds.^[8] Sikarwar and Kaushik (1993) reported that it is used in management of nasal bleeding, cough, as an antidote for scorpion stings, fractures, spermatorrhoea, to clear uterus after delivery and also to prevent the lactation.^[9] Sahoo and Mudgal (1993) reported, it is an antidysentery^[10], Kakrani and Saluja (1994) stated that it is used as antirheumatic.^[11] Ahmad (1995) reported that leaves are used as anti-malarial and antipyretic^[12], Tripathiet *al* (1996) as antihelmintic and diuretic^[13], Mohanty *et al* (1996) as antidiarrhoea^[14], Upadhay *et al* (1998) as Antiulcer and burn healing agent^[15], Sudhaker and Chetty (1998) documented the flower is used in dysentery, diarrhoea and to expel stone from kidney.^[16]

Botanical Name: *Aerva lanata* (linn) Juss.

The plant belongs to the family *Amaranthaceae*, which may be also spelt as *Amarantaceae*, the former spelling being more common. This family comprises of 64 genera and more than 800 species.^[17] The well-known species are *A. javanica*, *A. tomentosa* and *A. lanata*, the latter species is commonly used as medicine.

Parts Used

The whole plant; flowers, leaves, stem and roots are used for medicinal purpose. The juice of the fresh plant and extract of the dried plant, both the forms are in common use. The root is also applied on the fore head in headache.

Vernacular Names

Bisehri Booti (*Aerva lanata*) is called by various names in different language. The names have been arranged below alphabetically. Dymock *et al*, (1980)^[18], Bedi (1978)^[19], Nadkarni, (1976)^[20] Kirtikar and Basu, (1987).^[21]

Vernacular Names

Bengla	Chaya
Daccini	Khul, Kul
Dehli	Geduekichal
Gujrati	Bur, Kapurimadhuri, Gorkha, Ganjo
Hindi	Chaya, Gorkhbundi, KapuriJadi, Bui Kalan
Kan	Bilihidsoppu

Madras	Sirnapulayvayer
Marathi	Kapurmadhura, Kapurimadhuri, Kapuriphuti Kumrapindi, Nilapulai
Mundari	Chauliara, Ledraara
Punjabi	Buikallan, Chaya
Rajputana/Rajasthani	Bui
Sanskrit	Astambadya
Sindhi	Bui, Jari
Tamil	Sirupulai, Pulai, Poolai

History

A review of the available literature of Tibb-e-Unani, indicates that the plant *Aerva lanata* has not been discussed in most of the books. However, an important and renowned physician of 20th century namely Hkm. Abdul Qadir of district Amroha has mentioned Bisehri Booti in his Mujarrabat-e-Qadri (Qadir, 1930).^[22] Similarly, some other writers such as Ghani and Ibn Baitar have described this drug with the name of *Aksaar*. In Ayurvedic literature *Aerva lanata* has been mentioned under the name of Astambadya (Karnick, 1972 and Nadkarni, 1976).^[1,20] It has also been mentioned in the ethnobotanical literature. The literature shows that this drug was not in common use in India, while it was extensively used in Sri Lanka, for sore throat, cough and for the deworming of children (Trimen, 1974).^[23] The earliest pharmacological studies on the plant have also been performed in Sri Lanka (Udvpihille & Jiffery, 1986).^[24] In certain reports of the Indian system of Medicine, *Pashanbheda* has been claimed to be *Aerva lanata*. The Sanskrit names of *Aerva lanata* are *Paashaanbheda*, *Gorakshganjaa*, *Satkabhedi*, *Aadaanpaak*. It is commonly known as *sirupeelar* in Tamil or *Siddha*.

Pashanbheda in Ayurvedic literature is mentioned for cure of various ailments but the description of plant is so fragmentary that the botanical identity could not be established. About 23 plants have been mentioned as *pashanbheda* by Kapoor *et al* (1976)^[25] and *A. lanata* is one of them. Although the identity of *Pashanbheda* is controversial and learned practitioners of Indigenous System of Medicine have different views on the matter but in the ethnobotanical literature most of authors have mentioned *Aerva lanata*, as *Pashanbheda* (Kapoor *et al.*,1976).^[25] As mentioned above *Aerva* is derived from the Arabic word *Arva*. (Ahmad, 1994).^[26] In the major works of Tibb-e-Unani though there is no drug mentioned by the name of “*Arva*” but Najmul Ghani (1921)^[27] has provided some sketchy information

about it. He has mentioned that “*Arva*” is synonym for “*Aksaar*”. Ibn Baitar (1874)^[28], Najmul Ghani (1921). The description of this plant by the two authors is identical but it is quite different from the plant *Aerva lanata*. Ibn Baitar (1874) described its leaves to be like *Sowa* its underground roots as tuberous like *Daucus carota*, and its flowers are white. While *Aerva lanata* leaves are not similar to that of *Sowa*, its flower is greenish-white and its roots are certainly not tuberous. However, some of the actions of *Aksaar* such as lithotriptic, vermifuge etc. (Baitar, 1874; Ghani, 1921;), are similar to that of *Aerva lanata*. This may be one of the reasons for the equality of the two plants.^[29,30]

R. Krishnamoorthi (2015)^[31] suggests that the *Aerva lanata* have maximum number of bioactive components and higher amount of antioxidant potential in the ethanolic extract, therefore the ethanolic extract may have significant activity.

Suresh Mickymaray (2015)^[32] reported the major bioactive compounds in *A. lanata* are 3-*O*-methyl-D-glucose. It is a nontoxic nonmetabolizable derivative of glucose and it has been reported for antitumor activity. The antibacterial activity of *A. lanata* may be due to presence of 3-*O*-methyl-D-glucose. 9,12,15-Octadecatrienoic acid, 9,12-octadecadienoic acid and *n*-hexadecanoic acid are another major compound in the studied plant extracts and have been reported to have antimicrobial, antioxidant and anti-inflammatory activities. The antibacterial activity of *A. lanata* could be attributed to the presence of these phytoconstituents.

Klippel (1997)^[33] et al reported in a randomized, double-blind and placebo-controlled clinical trial which was conducted to assess the efficacy and safety of 130mg free b-sitosterol (phytosterol) daily, using the international prostate symptom score (IPSS) as the primary outcome variable. In total, 177 patients of BPH were recruited for 6 months of treatment in 13 study centers. They mentioned in the results that there were significant ($P < 0.01$) improvements over placebo in those treated with b-sitosterol; the mean difference in the IPSS between placebo and b-sitosterol, adjusted for the initial values, was 5.4 and in the QoL index was 0.9. There were also significant improvements in the secondary outcome variables, with an increase in (4.5 mL/s) and decrease in PVR (33.5 mL) in favour of b-sitosterol when adjusted for the changes after placebo and suggested that b-sitosterol is an effective option in the treatment of BPH.

Summary of Pharmacological actions

S. No	Actions	Ethnobotanical references
1.	Abortifacient	Manoj Goyal 2011 ^[34]
2.	Anti-cancer	Mandal Bistata ^[35]
3.	Anti-diabetic	Kumar as 2011, Agrawal R ^[36,37]
4.	Astringent	Varier 1996 ^[38]
5.	Anti-Inflammatory	Vetrichelvaln et al 2000 ^[39]
6.	Anti-microbial	Dinnimath BM 2013 ^[40]
7.	Anti-spasmodic	Wessel et al 1997 ^[41]
8.	Demulcent	Kritikar&Basu 1987 ^[21]
9.	Diuretic	Sridhar N ^[42]
10.	Emollient	Varier 1996 ^[38]
11.	Haemostatic	Singh 2005 ^[43]
12.	Hepatoprotective	Manokaran 2008, Ramachandra YL 2011, Anantha KCD 2008 ^[44-46]
13.	Hypolipidemic	Rajesh R 2012 ^[47]
14.	Immuno-modulator	Siveen KS 2011 ^[48]
15.	Lithotreptic	Qadir 1930 ^[22] , Kritikar&Basu ^[21] , Varier 1996 ^[38] , Nirmala devi ^[49]
16.	Nephroprotective	Soumya PS 2011 ^[50]
17.	Vermifuge	Mandal Bistata ^[35]

Therapeutic Uses

S.NO	Uses	Ethnomedical References
1.	Albuminurea	Afaq et al 1991 ^[8]
2.	Antidote of Arsenic	Mandal Bistata ^[35]
3.	Boils	Varier 1996 ^[38]
4.	Bronchitis	Vetrichelvan et al 2000 ^[39]
5.	Cholera	Dash RC 2013 ^[51]
6.	Cough	Kritikar&Basu 1987, Varier 1996 ^[38]
7.	Cutaneous Affections	Asolkar 1992 ^[52]
8.	Dental Carries	Vetrichelvan et al 2000 ^[39]
9.	Diabetes	Karnick 1972 ^[11]
10.	Diarrhoea	Jain 1970 ^[53]
11.	Dysentery	Jain 1970 ^[53]
12.	Fractures	Vetrichelvan et al 2000 ^[39]
13.	Haematuria	Afaq et al 1991 ^[8]
14.	Haematemesis	Karnick 1972 ^[11]
15.	Headache	Chopra 1959 ^[54]
16.	Prostatitis	Afaq et al 1991 ^[8]
17.	Renal and urethral calculi	Nirmala devi ^[49]
18.	Snake Bite	Jain 1970 ^[53] Asolkar 1992 ^[118]
19.	Spermatorrhoea	Vetrichelvan et al 2000 ^[39]
20.	Strangury	Kritikar&Basu 1987 ^[21] , Varier 1996 ^[38]
21.	Swelling	Karnick 1972 ^[11] , Asolkar 1992 ^[52]
22.	Tonic properties for pregnant women	Anonymous 1985

CONCLUSION

India has about 45,000 plant species and many of them have medicinal properties, having great importance to the health of individuals and communities in general. Among them *Aerva lanata* (Linn.) Juss. ex Schult. - Amaranthaceae is an herbaceous weed found throughout tropical region. It is used in case of Albuminurea, Boils, Bronchitis, Cholera, Cough, Cutaneous Affections, Dental, Carries, Diabetes, Diarrhoea, Dysentery, Fractures, Haematuria, Haematemesis, Headache, Prostatitis, Renal and urethral calculi, Snake Bite, Spermatorrhoea, Strangury, Swelling, Tonic properties for pregnant women etc. But most of the studies is preclinical, now need of the hour is to explore the full therapeutic potential of this drug in order to establish it as a standard drug.

Conflict of interest

None Declared.

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