

Ethnomedicinal claims of *Ficus semicordata* Buch.-Ham. ex Sm.: A review

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Abstract

Objective: *Ficus semicordata* Buch.-Ham. ex Sm. (Moraceae) has been attributed with numerous therapeutic claims in Indian traditional medicinal systems, especially for its ethnomedicinal and economical uses. Present review aims to congregate all available ethnomedicinal information on *Ficus semicordata*. **Material and Methods:** Information of all the reported ethnobotanical uses of the *Ficus semicordata* from available 21 books on ethnobotany and 53 ethnomedicinal research articles have been compiled. The obtained data are arranged in a tabular form, with regards to various local names, as known by different tribes across India, name of the tribe and their area of presence, part used. Therapeutic indications, external (E) and internal (I) usage of the drug are also noted in a separate column with individual references. **Results and Discussion:** It is observed that various parts of *F. semicordata* are used to combat several diseases. About 25 external applications and 40 internal administrations are reported. Fruit and root, as a parts used, have maximum applications in 16 disease conditions each. Stem bark is being used in 14, leaves in 9, latex in 7, young twigs and seeds are in 2 each and aerial parts in one diseased condition. **Conclusion:** Present ethnobotanical review shows the multi-faceted use of *Ficus semicordata* in varied aspects including its economical usage thus underlining its significance. Reported claimed anti-bacterial and anti-oxidant activities can be further strengthened through pharmacological and clinical studies to establish the ethnic claims like leprosy, wound, boil, liver disorders, gynecological disorders etc.

Key words: Bhumi udumbara, ethnomedicinal, *Ficus semicordata*, *Ficus cunia*, Fig, Folklore

INTRODUCTION

Plants have been an indispensable use to the health of humankind since time immemorial. Folklore medicine is a major area that is being focused on in the health research that involves medicinally important plants. Ethnobotany deals with the study of total natural and traditional inter-relationships between man, plants, and his domesticated animals.^[1] *Ficus* contains about 600 species, inhabiting mostly tropical countries.^[2] About 65 species occurs in India and the genus is remarkable for the large variation in the habit of its species from the giants of the vegetable kingdom (e.g., Banyan, Peepal, and India rubber) and also small wiry climbers such as *Ficus pumila* and *Ficus scandens* Roxb.^[3]

One species of the genus *Ficus* of family Moraceae, namely, *Ficus semicordata* Buch.-Ham. ex Sm. has been attributed with copious therapeutic claims in Indian traditional medical systems, especially with reference to its ethnomedicinal and economical uses.

F. semicordata is distributed along sub-Himalayan forests from Chenab to Manipur, ascending up

to 300 m, West Bengal, Odisha, Chota Nagpur, Central India, Bangladesh (Chittagong), Myanmar, and its cultivation occurs in valleys, ravines, and on the banks of streams; wild.^[4] Due to easy and abundant availability, the plant has been a part of traditional use in economic and healthcare purposes. Many claims have been reported during surveys in the tribal regions of various states of India and other parts of the world. Single hand information about the ethnomedicinal, economical uses of the species of *F. semicordata* is still lacking. Hence, in the present article, an attempt has been made to congregate data from the research journals, survey study reports, etc.

MATERIALS AND METHODS

Information of all the reported ethnobotanical uses of the *F. semicordata* Buch.-Ham. ex Sm. from available 21 books

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on ethnobotany and 53 ethnomedicinal research articles has been compiled from library source as well as from Google Scholar, Dhara, PubMed, Ayusoft, and AYU, web-based search engines during October 2017 to January 2018.

The obtained data are arranged in a tabular form, with regard to various local names, as known by different tribes across India, name of the tribe and their area of presence, part used, therapeutic indications, external (E), and internal (I) usage of the drug are also noted in a separate column with individual references. Recent researchers carried out on *F. semicordata* were also compiled and presented till date.

RESULTS AND DISCUSSION

Types

F. semicordata is known as a khanyu (meaning edible fruit) tree in Nepal and is used locally as a forage tree. Nepalese farmers distinguish two kinds of khanyu based on the fodder quality: Khasro and rai. Farmers tend to prefer rai khanyu because they believe that livestock fed with this give higher milk yields,

whereas khasro khanyu has an adverse effect on milk production and tends to reduce it. Earlier taxonomists did not mention the local names. Detailed taxonomic and ecological studies revealed that two varieties of khanyu occur in Nepal: The typical var. *semicordata* (khasro khanyu) and var. *montana* (rai khanyu).^[5]

Area of Reporting

It is observed that *F. semicordata* is being used as medicine in 16 states of India, namely, Chhattisgarh, Manipur, Jharkhand, West Bengal, Sikkim, Uttaranchal, Mizoram, Arunachal Pradesh, Nagaland, Assam, Jammu and Kashmir, Odisha, Uttar Pradesh, Himachal Pradesh, Rajasthan, and Maharashtra [Tables 1-6]. This shows the wide availability and use of this plant throughout India. In countries such as Bangladesh, Iraq, Nepal, Pakistan, Bhutan and Myanmar this plant is also reported for its medicinal uses [Tables 1-6].

Tribes

India has more than 300 tribal communities.^[6] In the present review, it is found that about eight tribes/communities (Tribal community in a part of Central Himalaya, Kom tribe

Table 1: Ethnomedicinal claims of fruits of *F. semicordata*

Local names	Tribes/areas	Dosage form: External application (E); internal administration (I)	Therapeutic claims	References
Khanyu	Nepal	Fruits (I)	Apthous complaints	[4,21,23,24,35,42,43]
Khaniyu	Nepal	A mixture made from the fruit and bark is used as a bath to cure leprosy (E)	Leprosy	[15,21-24,29,30,42-45]
Khaniyu	Nepal	Young fruit juice is applied on forehead to relieve headache (E)	Headache	[15,30]
Khaniyu	Nepal	Raw fruits are eaten in diarrhea (I)	Diarrhea	[15,30,41]
Joharphal, Kandrol	Jammu and Kashmir	Fruit and root juice is used (I)	Abdominal diseases	[18]
Khanyu	Nepal	Fruits (I)	Bladder ailments	[18,29,35,45]
-	West Bengal	Fruits (E)	Ulcer	[21,37]
Khaina	Kedarnath valley of W. Himalaya	Fruits (E)	Visceral obstruction	[23,24,29]
Khanayo	Nepal	Ripe figs (I)	Constipation	[30,40]
Khanayo	Nepal	Ripe figs (I)	Indigestion	[30,40]
Teen Barre	Iraq	Fruit	Dermatological disorders	[34]
Thotsenuo	Nagaland	Ripe fruits eaten raw (I)	Diabetes	[36]
-	West Bengal	Fruits	Colic pain	[37]
Khaniyo	Raji Community, Nepal	Fruits (I)	Marasmus	[38]
Chockoithi	Nagaland	Fruits (I)	Jaundice	[39]
Chockoithi	Nagaland	Fruits (I)	Hepatitis	[39]

F. semicordata: *Ficus semicordata*

Table 2: Ethnomedicinal claims of roots of *F. semicordata*

Local names	Tribes/areas	Dosage form: External application (E); internal administration (I)	Therapeutic claims	References
Khasre khanium	Sikkim	Juice from roots is given in bladder complaints (I)	Bladder complaints	[3,4,21,35,37,42,43,47]
Jajna-dumur, Garagasa, Poroh, Heibong	Manipur	Root juice useful in liver ailments (I)	Liver ailment	[4]
Khaniyu	Nepal	Root paste is taken to cure headache (I)	Headache	[15,30,48]
Joharphal, Kandrol	Jammu and Kashmir	Fruit and root juice is used for abdominal diseases (I)	Abdominal diseases	[18]
Khanyu	Nepal	Root juice is used in lowering body temperature (I)	Hyperthermia	[19,49]
Khasre khanium	Sikkim	Juice from roots is given in and visceral obstructions (I)	Visceral obstructions	[21,42,43,47]
Dumur	West Bengal	Root	Wound	[27]
-	-	Root (I)	Constipation	[30]
-	-	Root (I)	Indigestion	[30]
Khanayo	Nepal	Root juice is given in menstrual disorder (I)	Menstrual disorder	[30,40]
Khanyu	Nepal	Root (I)	Aphthous complaints	[35]
-	West Bengal	Root (E)	Ulcer	[37]
-	West Bengal	Root (E)	Colic pain	[37]
-	West Bengal	Root (E)	Leprosy	[37]
Putkal	Tribes of Jharkhand	Roots of Jhahjuhi Phool (<i>M. jalapa</i> Linn.)+ (20 g) +Kela (<i>M. paradisiaca</i> Linn.) (5 g) +Putkal (<i>F. cunia</i> Ham.) (10 g) are crushed together and drink is prepared by mixing it with one glass water. The drink is taken in the morning with empty stomach for 2 consecutive days (I)	Leucorrhea	[46]
Khurhur	Tharu community, Nepal	Juice of root is applied to treat fever (E)	Fever	[48]

F. semicordata: *Ficus semicordata*, *M. jalapa*: *Mirabilis jalapa*, *F. cunia*: *Ficus cunia*, *M. paradisiaca*: *Musa paradisiaca*

in Manipur, Tribes of Jharkhand, Ethnic communities of Arunachal Pradesh, Bhotiya Tribal communities of Niti Valley in Central Himalaya, Tharu community of Parroha VDC, Raji Tribe in West Nepal, and Chepang community in Nepal) use the species to combat various disease conditions [Tables 1-6].

Parts Used in Various Diseased Conditions

It is observed that various parts of *F. semicordata* are used to combat several diseases. About 25 external applications

and 40 internal administrations are reported. Fruit and root, as a part used, has maximum applications in 16 diseased conditions each. Stem bark is being used in 14 diseased conditions, leaves in 9 diseased condition and latex in 7 diseased condition, young twigs and seeds are also used in 2 diseased condition each, and aerial parts are used in one diseased condition. There were variations observed in the total number of claims and the external and internal applications as in some claims the mode of administration was not vividly explained [Tables 1-6].

Table 3: Ethnomedicinal claims of bark of *F. semicordata*

Local names	Tribes/areas	Dosage form: External application (E); internal administration (I)	Therapeutic claims	References
Khaina Khaniyu	Kedarnath valley of W. Himalaya Nepal	Bark (E) A mixture made from the fruit and bark is used as bath to cure leprosy (E)	Leprosy	[4, 15,21-24,29,30,42-45]
Khaniyu	Nepal	Barks of <i>F. semicordata</i> , <i>S. wallichii</i> , <i>S. cumini</i> , <i>P. emblica</i> , and <i>M. indica</i> are pounded and given in gastric (I)	Gastric	[15,30]
Khaniyu	Nepal Bhutan	Barks of <i>F. semicordata</i> , <i>S. wallichii</i> , <i>S. cumini</i> , <i>P. emblica</i> , and <i>M. indica</i> are pounded and given in ulcer Bark decoction used for washing ulcers (E)	Ulcer	[15,21,30]
-	Manipur	Bark soup after boiling in water is taken against dysentery (I)	Dysentery	[16,30]
Thenpui	Manipur	Bark soup after boiling in water is taken against liver complain (I)	Liver complain	[16,30,31,42]
-	Bhutan	Juice and powdered bark - applied to wounds and bruises (E)	Wound	[21]
Khaina	Garhwal region	Fresh decoction of the stem bark and leaves is given orally at the time of pregnancy (I)	Pregnancy	[26]
Khaina	Kedarnath valley of W. Himalaya	Bark (E)	Bladder complaints	[29]
Khaina	Kedarnath valley of W. Himalaya	Bark (E)	Visceral obstruction	[29]
-	-	Bark (E)	Baldness	[30]
Tukusen	Ethnic community, Arunachal Pradesh	Bark (I)	Toothache	[30,51]
Tukusen	Ethnic community, Arunachal Pradesh	Bark (I)	Diarrhea	[30,51]
Theipui	Mizoram	Juice of stem bark is used for treating boil (E)	Boil	[50]
-	-	The juice of the bark mixed with equal quantities of the juice from the bark of <i>F. semicordata</i> and <i>M. esculenta</i> is used in the treatment of menstrual disorders (I)	Menstrual disorder	[52]

F. semicordata: *Ficus semicordata*, *S. wallichii*: *Schima wallichii*, *S. cumini*: *Syzygium cumini*, *P. emblica*: *Phyllanthus emblica*, *M. indica*: *Mangifera indica*, *M. esculenta*: *Myrica esculenta*

Therapeutic Uses

Various parts of *F. semicordata* are observed to be used in 34 different disease conditions. It is exclusively used in skin disorders, followed by aphthous complaints, liver ailment, wound, and boil indicating its vast range of therapeutic claims [Tables 1-6].

Recent researches: It is also found that *F. semicordata* has also been reported for its antidiabetic potential,^[7,8] antioxidant activity (Leaves, Fruits),^[9,10] antibacterial (Leaves),^[11]

anticancer,^[12] carbohydrate specificity,^[13] and agglutinin activity for recognition of bacteria.^[14]

Economical Uses

Leaves are used as fodder,^[15-20] used for polishing woods.^[20,23,24] Bark fiber is used to make ropes,^[18] used as fuelwood;^[19] the tree is recorded hosts of the Indian lac insect^[21] fruits are reported to be used in the preparation of jam.^[3] Strong cordage is made from the bark is employed to tie rafters and

Table 4: Ethnomedicinal claims of *F. semicordata* leaves

Local names	Tribes/areas	Dosage form: External application (E); internal administration (I)	Therapeutic claims	References
-	Manipur	Leaf decoction in combination with other plant extract is taken orally to get relief from jaundice (I)	Jaundice	[16,30,33]
Jogya-dumur	Bangladesh	Leaves and seeds of <i>F. cunia</i> are taken orally with bulb of <i>A. cepa</i> and leaves of <i>O. indicum</i> (I)	Stomach disorders	[25]
Khaina	Garhwal region	Fresh decoction of the stem bark and leaves is given orally at the time of pregnancy (I)	Pregnancy	[26]
Dumur	West Bengal	Leaves	Wound	[27]
Khanyu	Nepal	The juice of leaves is applied for curing scabies (E)	Scabies	[28]
Khaina	Kedarnath valley of W. Himalaya	Leaves and fiber water bath (E)	Leprosy	[29]
-	-	Leaf (I)	Indigestion	[30]
Thenpui	Mizoram	Leaf (I)	Liver ailment	[31]
Khanyu	Nepal	Juice of leaf is applied over affected parts to cure skin diseases (E)	Skin diseases	[32]

F. semicordata: *Ficus semicordata*, *A. cepa*: *Allium cepa*, *F. cunia*: *Ficus cunia*, *O. indicum*: *Oroxylum indicum*

Table 5: Ethnomedicinal claims of *F. semicordata* latex

Local names	Tribes/areas	Dosage form: External application (E); internal administration (I)	Therapeutic claims	References
Khaniyu	Nepal	Latex is drunk to cure fever (I)	Fever	[15,30,40]
Khasre khanium	Sikkim	Latex is used to treat boils (E)	Boil	[15,30,47,54,58,59]
Dumur	West Bengal	Latex (E)	Wound	[27,56]
Khaina	Bhotiya Tribal Communities of Niti Valley	Milky latex is applied (E)	Baldness	[30,55]
-	West Bengal	Milky latex (E)	Ulcers	[37]
-	West Bengal	Milky latex (E)	Leprosy	[37]
Khanyu	Nepal	Latex in raw form	Mumps	[57,58]

F. semicordata: *Ficus semicordata*

Table 6: Ethnomedicinal claims of seeds, twig, and aerial parts of *F. semicordata*

Seeds				
Local names	Tribes/areas	Dosage form: External application (E); internal administration (I)	Therapeutic claims	References
Jogya-dumur	Bangladesh	Leaves and seeds of <i>F. cunia</i> are taken orally with bulb of <i>A. cepa</i> and leaves of <i>O. indicum</i> (I)	Stomach disorders	[25]
Khinwa	Tribal Community in a part of Central Himalaya	Seeds of this plant are given to cattle to remove any obstruction in their throats (Bhekuna) caused by grass or fodder (I)	Throat obstruction	[53]
Twig				
Khaniyu	Nepal	Young twigs are fed to cattle for facilitating the discharge of placenta (I)	Placental discharge	[15,30,74]
Khaniyu	Nepal	Fume of twigs is used in earache (E)	Earache	[15,30]
Aerial parts				
Khunia	Uttar Pradesh	Milky sap of aerial parts diluted once in water and given in typhoid fever (I)	Typhoid	[60,61]

F. semicordata: *Ficus semicordata*, *A. cepa*: *Allium cepa*, *F. cunia*: *Ficus cunia*, *O. indicum*: *Oroxylum indicum*

roof beams.^[22] Ripen fruits are edible.^[3,5,17,18,20,22,59,62-73] Leaves are also used as vegetable with pork.^[68]

CONCLUSION

Present ethnobotanical review shows the multifaceted use of *F. semicordata* in varied aspects including its economical usage, thus underlining its significance. The present review reports the traditional use of *F. semicordata* in 16 states of India and neighboring countries by 8 tribes. *F. semicordata* is utilized in 34 diseased conditions, out of which 40 as internal administration and 25 external applications. Reported claimed antibacterial (leaves) and antioxidant activities of leaves and fruits can be further strengthened through pharmacological and clinical studies to establish the ethnic claims such as leprosy, wound, boil, liver disorders, and gynecological disorders.

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