Medicinal Plant Wealth of India

BHUMYAMALAKI COMPLEX
(Herbaceous Phyllanthus)

'Bhumyamalaki',
widely used in Indian systems of medicine for a wide range of diseases, particularly jaundice, refers to a complex group of herbaceous species of the genus Phyllanthus. Bhumyamalaki, literally means a miniature 'amla' or 'gooseberry' and derives this name due to the similarity of this group of species to the 'amla' or 'gooseberry' fruits. Other popular names i.e., Keelaneli (Tamil), Keelar Neeli (Malayalam), Nelaneli (Kannada) and Nelausirika (Telugu) also refers to the herbaceous nature of this plant with fruits on the underside of leaves.

The genus Phyllanthus L. belongs to the family Euphorbiaceae and includes about 800 species worldwide. In India, the genus is represented by about 40 species, out of which 12 species form a herbaceous complex group. These species are P. ajmerianus Chaudhary & Rao, P. amarus Schum., P. debilis Klein ex Willd., P. fraternus Webster, P. kozhikodianus Sivadasan & Manilal, P. maderaspatensis L., P. rheedii Wight, P. rotundifolius Klein ex Willd., P. scabrifolius Hook. f., P. tenellus Roxb. P. urinaria L. and P. virgatus Forst.f.

Phyllanthus niruri* V/s *Phyllanthus amarus
There has been confusion about the botanical nomenclature of Bhumyamalaki due to its wrong linkage to Phyllanthus niruri L., a plant found only in the West Indies. The recent studies show that it actually refers to P. amarus, a common weed in India. Sometimes it is also correlated to other species of herbaceous Phyllanthus complex.

Identification issues
Even though Bhumyamalaki is now correlated to P. amarus, yet the apparent similarity between different species of this complex makes it difficult to identify P. amarus from its closely related species. Therefore, the raw material traded as Bhumyamalaki is in fact an inseparable mix of more than one species of this complex.

Distinguishing features
All the 12 species of this group display a range of characteristic features that can help in their identification. Some of such features are the nature of stem, presence and thickening of cataphylls, shape and thickening of stipules, shape of leaves, nature of stamens and male disk, number, shape and thickening of female perianth lobes, shape of female disk and style and tuberculed nature of fruits. Illustrations with photographs & line drawings of main distinguishing features like cataphylls, stipules, leaves and female perianth lobes of each species are provided here for easy identification of this complex group.

Phyllanthus amarus
Tropical countries

Chemical components and uses

The genus *Phyllanthus* contains *Phyllanthine* and *Hypophyllanthine* as major chemical components, useful in treating Hepatitis-B. Recent studies show that *P. amarus* has the highest percent of *Phyllanthine* and *Hypophyllanthine* in this complex and is most suitable for treating various types of Jaundice. Similarly, studies on *P. debilis* show better hepatoprotective effect than others.

A recent study on *Bhumyamalaki* (*JMAPS*, 29, 2006) shows the following quantity of *Phyllanthine* and *Hypophyllanthine* in different *Phyllanthus* species.

Species	*Phyllanthine* (%)	*Hypophyllanthine* (%)
P. amarus	0.8	0.15
P. debilis	0.0006	0
P. fraternus	0.21	0.005
P. urinaria	0.005	0.002

Bhumyamalaki forms a key constituent in Ayurvedic formulations for jaundice, urinary diseases, enemia, gonorrhea, chronic dysentery and general liver problems.

Trade
It is estimated that the annual consumption of *Bhumyamalaki* in India is about 3000 metric tons.

Phyllanthus tenellus
Tropical countries

Phyllanthus debilis
Asia

Phyllanthus fraternus
Asia, Africa & South America

Phyllanthus urinaria
Tropical countries

Phyllanthus kozhikodianus
India

Phyllanthus rotundifolius
Asia & Africa

Phyllanthus scabrifolius
India

Phyllanthus maderaspatensis
Asia

Phyllanthus virgatus
South Asia, Australia & Pacific Islands

- Cataphyll - Stipule - Leaf - Perianth lobes of female flowers

Fig. 1 and 6: Perianth lobes 5 (in others 6)
Fig. 8 to 10: Cataphylls absent (in others present)

ielding medicinal plants

MEDICINAL PLANT WEALTH OF INDIA

he immemorial dyes of plant origin rendered color to the ndian tradition dyes play a significant role in religion, culture, and social fabric. Yellow is associated with sanctity, prosperity s. No religion ceremony is complete in India without Haldi- ilarly Red is a color of awakening, activity and sacrifice and yellow, Rubia cordifolia – Madder.

base on medicinal plants of India has more than 6000 medicinal and of it more than 325 species are known to be source of

ielding plants are used prominently for medicinal purpose, as , dyeing textiles, paintings, mural paintings, toys (safe for festivals and culture and cosmetics etc. All dyes require a fixative which are the nature of inorganic material.

and ancient architectures such as Mural paintings at Ajanta getable fibres, paddy husk, grass, other organic material and nd in their paintings. Vegetables and fruits such as onion skins, n, walnut, grape juice, strawberries, beet root juice are used to which are used in coloring food, textiles and wool.

ye yielding medicinal plants are also having therapeutic ood colors from plant materials is intensively researched today and recommended in medicines and dietary supplements. The lants have been used from time immemorial and surprisingly ocus sativus, Indigofera tinctoria , Bixa orellana, Caesalpinia onia inermis, Tagetes erecta, are not of indian origin but exotic.

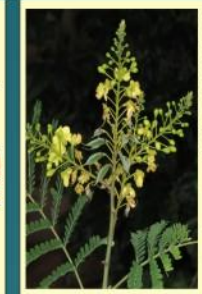
s of both exotic e yielding plants ed below:

present species with medicinal d till recent past used to yield s of dye.

Acacia catechu (Mimosaceae)
Local Name: Khadira, Katha
Part Used : Wood
Dye: brown, yellow, grey and black
Medicinal Tag: AUS
Uses: This dye is used for dyeing cotton, wool and silk. Katha (dye) is an indispensable ingredients of paan preparation. Katha also is used in calico printing.
Distribution: India, Pakistan, Nepal and Myanmar, Bangladesh, South China

Bixa orellana (Bixaceae)
Local Name: Arnatto
Part used: Fruits
Dye: Red
Medicinal Tag: AFHS
Uses: The tribal women used to color their lips and in turn it takes care of lips too. Thus called lipstick tree. It is used as food colorant and in cosmetics industry.
Distribution: Native of Tropical America

Butea monosperma (Fabaceae)
Local Name: Dhak
Part Used: Flower
Dye: Yellow dye
Medicinal Tag: AFTUS
Uses: Used in textiles and food industry.
Distribution: Indo-Malesia

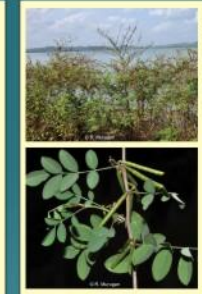


Caesalpinia s
(Caesalpiniac
Local Name: S
Part Used: Wo
Dye: Red
Medicinal Tag
Uses: Used in water. Also u and wood sta
Distribution:

Crocus sativus **(Iridaceae)**
Local Name: Saffron
Part Used: Style and Stigma
Dye: Yellow
Medicinal Tag: AFHTUS
Uses: For flavouring and imparting yellow colour to foods.
Distribution: Native of south Europe and West Asia.

Curcuma longa (Zingiberaceae)
Local Name: Turmeric
Part: Rhizome
Dye: Yellow dye
Medicinal Tag: AFHTUS
Uses: Used to color food preparations, pickles confectionaries and drinks.
Distribution: Cultivated in India

Eclipta alba (Asteraceae)
Local Name: Brngaraja
Part: Leaves
Dye: Black
Medicinal Tag: AFTUS
Uses: Used for darkening of hair.
Distribution: Native of South America



Indigofera tin
Local Name:
Part used: Le
Dye: Indigo
Medicinal Tag
Uses: Textiles colorant
Distribution:

Pterocarpus santalinus
(Fabaceae)
Part: Heartwood
Dye: Red
Medicinal Tag: AFTUS
Uses: For dyeing wool, cotton, leather and staining other woods. Orange and red colorant for food and beverage industry.
Distribution: Endemic to Andhra Pradesh

Lawsonia inermis (Lythraceae)
Local Name: Henna
Part Used: Leaves
Dye: Red to brown
Medicinal Tag: AFTUS
Use: Used as mehendi; also for dyeing hair.
Distribution: North Africa, Southwest Asia, India, Java

Mallotus philippensis **(Euphorbiaceae)**
Local Name: Kamal
Parts Used: Seeds, Pods
Dye: Red/ Yellow/ Orange
Medicinal Tag: AHFUS
Uses: Coloring food stuffs. Also used as sindhur/ kumkum by women. Also used in Holi.
Distribution: Indo-Malesia to Australia

Morinda tinctoria (Rubiaceae)
Local Name: Aal, Indian Mulberry
Part Used: Root
Dye: Red, purple
Medicinal Tag: FS
Uses: Used for dyeing cotton, silk, wool
Distribution: Indo-malesia

Onosma hisp
Local Name:
Part used: Ro
Dye: Red
Uses: Used as wools, oils an preparations.
Distribution: and India

Pterocarpus santalinus
(Fabaceae)
Part: Heartwood
Dye: Red
Medicinal Tag: AFTUS
Uses: For dyeing wool, cotton, leather and staining other woods. Orange and red colorant for food and beverage industry.
Distribution: Endemic to Andhra Pradesh

Punica granatum (Punicaceae)
Local name: Pomegranate
Part used: Bark, fruit, rind and flower
Dye: Yellow-Brown & Red
Medicinal Tag: AFHTUS
Uses: Used for dyeing wool & silk.
Distribution: S. Europe, N. Africa, S.E. Asia

Rubia cordifolia (Rubiaceae)
Local Name: Manjeestha, Indian Madder
Part used: Root/ Stem
Dye: Red/Scarlet
Medicinal Tag: AFTUS
Uses: Used for textile dyeing & food colouring.
Distribution: Asia, Africa and Europe

Terminalia chebula
(Combretaceae)
Local Name: Haritaki/ Myrobalans
Parts used: Fruit and bark
Dye: yellow to black dye
Medicinal Tag: AHTUSF
Uses: Used as standard writing ink in the ancient days.
Distribution: Indo-malayan

Ventilago ma
(Rhamnaceae
Local Name:
Part Used: Ba
Dye: Red, Pur
Medicinal Tag
Uses: Used fo mordanted co silk.
Distribution:

Join hands to conserve hidden colors of our Nature

Medicinal Plant Wealth of India

GOKSURA

Medicinal Plant Wealth of India

FRLHT

HERBAL TOOTHBRUSH

Today there is a definite trend to lean back to nature and dental care is one step in that direction. Toothbrush was used by the Babylonians some 7000 years ago; it was later used throughout the Greek and Roman empires, and has also been used by ancient Egyptians and Muslims. People have used chewing stick for oral hygiene, religious and social purposes. It is used not only to clean teeth but also gums. Indian medicine Ayurveda has used Neem as an important tree to create toothbrushes. Miswak is usually obtained from the roots of *Salvadora oleoides* known as "Miswak" or "Arak" or "tooth brush tree". At times some sticks are made from its branches and bark. It was widely used since the time of Prophet Mohamed who himself used it and appreciated its use in 570-632 AD.

The beneficial effects of toothbrush in respect of oral hygiene and dental health are partly due to its mechanical action and partly due to pharmacological actions.

Herbal toothbrush is known to prevent tooth decay, eliminate toothaches and halt the increase of tooth decay that has already set in. Furthermore it is known to eliminate bad breath, improve sense of taste and cause the teeth to glow and shine. Teeth cleaning twigs can be obtained from a variety of plant species.

Few examples of the plants along with their part used and uses across the country are given below:

***Acacia nilotica* (Mimosaceae)**
Young stem - Tooth ache & Gum disorders

***Achyranthes aspera* (Amaranthaceae)**
Stem & Root - Gum disorders & Gingivitis

***Alangium salvifolium* (Alangiaceae)**
Young stem - Foetid breath

***Azadirachta indica* (Meliaceae)**
Young stem - Pyorrhoea, Foetid breath & dentifrice

***Cocos nucifera* (Arecaceae)**
Inflorescence Stalk - Foetid breath

***Ficus benghalensis* (Moraceae)**
Prop root - Dental & Gum disorders

***Glycosmis pentaphylla* (Rutaceae)**
Young stem - Tooth ache

***Jatropha curcas* (Euphorbiaceae)**
Young stem - Foetid smell & Mouth ulcer

***Juglans regia* (Juglandaceae)**
Stem bark - Tooth ache & Dentifrice

***Mangifera indica* (Anacardiaceae)**
Leaf - Foetid smell

***Phoenix sylvestris* (Arecaceae)**
Petiole - Tooth ache

***Phyllanthus reticulatus* (Euphorbiaceae)**
Young stem - Bleeding gum

***Pongamia pinnata* (Fabaceae)**
Young stem - Strengthening gums & Dentifrice

***Psidium guajava* (Myrtaceae)**
Young stem - Bleeding gum & Dentifrice

***Salvadora oleoides* (Salvadoraceae)**
Young stem - Pyorrhoea, Foetid breath & Dentifrice

***Thespesia populnea* (Malvaceae)**
Young stem - Tooth ache

***Wrightia tinctoria* (Apocynaceae)**
Young stem - Tooth ache

***Zanthoxylum armatum* (Rutaceae)**
Young stem - Tooth ache

Let us all join hands in conserving our nature's wealth for human health

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Website: www.frlht.org / E-mail: herbarium@frlht.org / Tel: 080-28568005

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Medicinal Plant Wealth of India

PASHANABHEDA

पाषाणभेदकोऽश्मघ्नो गिरिभिदभिन्योजनी । (भा.प्र.)
पाषाणभेदकोऽश्मघ्नः शिलाभेदोऽश्मभेदकः ।

In Ayurveda "***Pashanabheda***" (*pashana* = stone; *bheda* = to break) is used to disintegrate the stones or calculi in kidney as it possesses lithotriptic property.

Raw drug description

Pashanabheda consists of short, transversely cut pieces of rhizomes, varying from 0.7 to 2.5 cm in length which are buff-brown outside and pinkish brown inside. They are transversely wrinkled or irregularly shriveled with exfoliating, thin bark, having rootlets or thin scars, buds and scaly leaves. It has slightly camphoraceous odour and acrid taste.

Uses

The drug is reported to possess lithotriptic, astringent, tonic, antiscorbutic and laxative properties. It is reported to be used for the treatment of pulmonary affection, dysentery, ulcers, dysuria, spleen enlargement, cough and fever.

Plants correlated

Different plants are used as *Pashanabheda* in different parts of India. The classical texts and ethno-botanical literature in the past 100 years correlate 8 medicinal plant species, which are illustrated below:

Aerva lanata (Amaranthaceae)

Ammannia baccifera (Lythraceae)

Bergenia ciliata (Saxifragaceae)

Bridelia montana (Euphorbiaceae)

Homonoia riparia (Euphorbiaceae)

Kalanchoe pinnata (Crassulaceae)

Ocimum basilicum (Lamiaceae)

Rotula aquatica (Boraginaceae)

Causes for kidney stones

The causes are multi-factorial as there are genetic predispositions, climatic conditions, water indicators and other dietary factors. The most important thing is the intrinsic metabolic contribution to the formation of these stones. Certain substances in urine crystallize and concentrate to form solid deposit known as renal calculi (Latin: renal=kidney, calculi=pebbles).

Different types of kidney stones

The most common renal stones are "calcium oxalate". Apart from this, the other components of stones are magnesium ammonium phosphate and uric acid.

Plants used in folk traditions for treating renal calculi (Kidney stones)

The households among various ethnic commu-nities across the country use different plants to treat kidney stones, for example:

1. Seeds of Kulatthah/Horse-gram [*Macrotyloma uniflorum*; Fabaceae]
2. Pseudo stem of Kadali/ Banana [*Musa paradisiaca*; Musaceae]
3. Seeds of Methi/ Fenugreek [*Trigonella foenum-graecum*; Fabaceae]
4. Seeds of Kasani/ Chicory [*Cichorium intybus*; Asteraceae]

1.

2.

3.

4.

Modern treatment

Lithotripsy is the modern medical treatment given to break kidney stones using ultrasound waves.

Let us appreciate and conserve this nature's gift to mankind!

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