

A REVIEW ON FLOWERING PLANTS OF GOA AND THEIR MEDICINAL USES

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Abstract: Since ancient times plants are considered as an exemplary source of medicine. Ayurveda has mentioned about various medicinal plants which can be used for the successful treatment of the various diseases. There are around 45000 plant species found in India. Goa, the state of India, is gifted with incredible natural beauty. It has rich tradition of using various medicinal plants for the treatment. There are 3000 different species of plants and flowering trees found in Goa. The present paper reviews 5 such plants which are commonly found in Goa and have various traditional medicinal uses.

Key words: Medicinal plants, Traditional use, Goa, *Stachytarpheta*, *Ensete*

I. INTRODUCTION

Traditional medicines are used by about 60% of the world's population for the treatment of various health related conditions. These are not only used as primary healthcare in developing countries, but it is also gaining popularity in developed countries as well where modern medicines are pre-dominantly used. Traditional medicines are derived from different sources like medicinal plants, minerals and organic matter; the herbal drugs are prepared only from the plant source.

In the Indian systems of medicines, most of the practitioners prepare and dispense their own recipes depending upon the availability of the flora in that particular region; hence this requires proper documentation and research. In western world also, demand for herbal medicines is steadily growing with approximately 40% of population prefer to use various herbs for the treatment.

There are about 45000 plant species in India, with concentrated hot spots in the region of Eastern Himalayas, Western Ghats and Andaman and Nicobar Islands. The officially documented plants with their medicinal properties are 3000 but traditional practitioners use more than 6000

medicinal plants for the treatment purpose. India is the largest producer of medicinal herbs and is appropriately called the botanical garden of the world.

Goa, the smallest state of India, is gifted with incredible natural beauty. It has rich tradition of using various medicinal plants for the treatment. There are 3000 different species of plants and flowering trees are found in Goa. The present paper reviews 5 such plants which are commonly found in Goa and have various traditional medicinal uses. These are Ajeru (*Heliotropium indicum*), Tarfel (*Stachytarpheta jamaicensis*), Ranghevada (*Paracalyx scariosus*), ChavayKel (*Ensetes superbum*) and Mor Tura (*Cyanotis arachnoidea*).

Following are five different flowering plants observed in the state of Goa among several others which have medicinal uses but are not mentioned in all the classical texts.

A) Ajeru



Fig. 1: *Heliotropium indicum* growing on barren land

Botanical Name: *Heliotropium indicum*

Family: Boraginaceae

Vernacular Names: In Sanskrit it is called as *Srihastini*, *Hastishundi*, *Vruschikali* and *Chanchachuphala* and in English it is commonly known as Indian Heliotrope, Indian Turnsole. Marathi: Bhurundi; Hindi: Hathajodi; Konkani: Ajeru

Habitat

Origin of this plant is considered as Asia continent. In Goa it is found at most of the places such as along the road side, barren land fields and open land surfaces¹.

Plant Description

It is a small, spreading, slightly succulent, foetid annual herb. It grows to an average height of 15-20 cm. The leaves are simple, alternate, or sub-opposite, ovate, obtuse, hispid-pubescent, filled with veins in lower side. Flowers are pale violet, primarily found in axillary scorpioid cymes. The fruits are nutlets combined in pairs¹.

Flowering Month: December and January

Useful part: Whole plant

Phytochemical Constituents: Heliotrope has therapeutic properties due to the presence of chemical components viz. Pyrrolizidine Alkaloids, Tannins and Saponins.

Medicinal properties

Plant pacifies vitiated pitta *andvata*, ulcers, sores, wounds, skin diseases, insect stings, rheumatism, fever, cough, ringworm, erysipelas and eye pain². Seeds cure stomach distress. Indian Alkaloid component (indicine principal base, echinatine, supinine, heleurine, heliotrine, lasiocarpine and lasiocarpine N-oxide) is responsible for anti-inflammatory, wound healing, antiseptic, antimicrobial, febrifuge, stimulation of gall bladder functions and menstruation stimulating properties. The most important local applications of the plant are for the skin lesions, wounds, abscesses, gastric and varicose ulcerations, rashes and warts².

The infusion of the flowers taken in small doses regulates menstruation, where large doses are abortive.

B) Tarfel

Fig. 2: *Heliotropium indicum* growing in wild

Botanical Name: *Stachytarpheta jamaicensis*

Family: Verbenaceae

Vernacular Names: In Marathi it is called as *Tarfel* and in English it is named as Blue porterweed, Blue snakeweed, Brazilian tea, Jamaica vervain, Joee etc.

Habitat: The plant mostly grows in the tropical regions of America and other subtropical forests such as in Nigeria, Europe, and Russia³. It is also widely distributed in acclimatized tropics such as those in Malaysia and Indonesia. It is referred to as “JolokCacing” or “SelasihDandi” in these countries. In Brazil it is known as Brazilian Tea⁴.

In **Goa** it is found at various places; most commonly it is seen in open barren land fields and it naturally grows along the road sides. It is also cultivated in the gardens.

Plant Description

S. jamaicensis is a weedy herbaceous plant that grows 60–120 cm tall. This plant has a smooth, dark green coloured stem, which turns woody towards the base of the stem. *S. jamaicensis* normally reproduces flowers in the month of October and November in mix of bluish and pinkish colours or could bear flowers with a purple to deep blue colour. These beautiful flowers attract the butterflies. The leaves are opposite, greyish green in colour, have a

smooth surface, and have a round apex and distinct petioles. Shedding of the leaves begins with the onset of the *hemanta rutu*. In *Shishir* and *vasant rutu* branches get dried and they fall apart. However, with the onset of the rainy season it begins to grow again⁵.

Flowering Month: October to November

Useful Part: Leaf and stem

Phytochemical Constituents: These bioactive compounds can be found abundantly in all parts of the plant. In particular, the phytochemicals in phenolic compounds of *S. jamaicensis*, which include coumarins, flavonoids, tannins⁶, and saponins³, are the most studied among researchers due to their therapeutic properties.

Medicinal Properties

S. jamaicensis has been used traditionally by the elderly for decades. Nevertheless, little is known about this plant compared to other plants. *S. jamaicensis* is widely known for its high medicinal properties in traditional and folk medicinal systems in various countries. This plant has been reported to possess pharmacological effects due to the presence of various bioactive phytochemicals⁷.

In herbal medicine, *S. jamaicensis* itself has been known to demonstrate antacid, analgesic, anti-inflammatory, hypotensive, antihelminthic, diuretic, laxative, lactagogue, purgative, sedative, spasmogenic, vasodilator, vulnerary, and vermifuge properties⁸.

S. jamaicensis has also been extensively used by the elderly as a cooling tonic for the stomach. The leaf and stem extracts of this plant are usually prepared in the form of tea bag before being consumed⁹. This cooling tonic is consumed to stimulate the function of the gastrointestinal tract or to aid in digestive problems such as indigestion, acid reflux, ulcers, constipation, dyspepsia, and slow digestion¹⁰. Furthermore, it is also often used to treat allergies and respiratory conditions such as asthma, cold, flu, bronchitis, and cough, as well as cirrhosis and hepatitis. The leaf extract of *S. jamaicensis* can also be applied externally to clean cuts, wounds, ulcers, and sores¹¹.

C) Ranghevada

Fig. 3: *Paracalyx scariosus* growing in wild

Botanical name: *Paracalyxscariosus*

Family: Fabaceae

Vernacular Name: In Sanskrit it is called as Nadinishpava.

Habitat: It is native of India, Burma and Siam. It is mostly found at Western Ghats of India. It naturally grows on the mountain regions in the forests of Goa.

Plant Description:

It is a twiner growing extensive with woodsystems and branches which are finely downy or tomentose. Leaves are trifoliate, alternate; it has 3 leaflets, terminal rhomboid, laterals obliquely ovate, velvety pubescent, apex acute, base rounded. Flowers are yellow coloured arranged in axillary peduncled racemes. Ants are usually seen in the flowers. The pods are oblique, downy, 1-seeded.

Flowering and fruiting: November–April

Useful Part: Root and fruit

Phytochemical Constituents: The roots are known to contain tannin whereas leaves showed presence of scariosin, isorynchospermin, kaempferol, quercetin, kaempferol 3-O-rutinoside and rutin (Ramoji et al., 2014).

Medicinal uses: It is used in epilepsy and to induce sleep. The fruit is acrid and bitter known to improve taste, acts as appetizer, and astringent to the bowels. The plant enriches the blood, cures biliousness, liver disorders and *kapha*. It is good for throat troubles, causes flatulence. The root is useful for treating dysentery and leucorrhoea and also applied externally along with other drugs to reduce tumors²¹.

D) Chavay Kel



Fig. 4: *Ensete superbum* growing in wild

Botanical Name: *Ensete superbum*

Family: Musaceae

Vernacular Name: It is commonly known as cliff banana

Sanskrit: Bahuja; Marathi: Chaveni, Rankeli; Hindi: Jungle Kela; English: Rock Banana, Wild Plantain; Konkani: Chavaykela, Ran kela

Habitat: The plant is well-known from the Western Ghats, Anaimalai Hills, some other South Indian hills in Dindigul and other parts of the peninsular India¹². It has also been recorded from Jhadol and Onga forest ranges in Rajasthan, North India.¹³ It is found on high rocky mountains in the forests of Goa.

Plant Description:

E. superbum is monocarpic, non-stoloniferous, unbranched herb that reproduces only through seeds. The ecotype found in moist Western Ghats completes its life cycle in 3-3.5 years. It attains an average height of 3-4 m and is characterized by an enormous swollen base of 2.5-3 m

circumference¹⁴. Leaves of *E. superbum* have short, green petiole with a prominent red midrib. Mature leaves attain an average length and width of 3.5-4 m and 0.5-1.0 m respectively. Petiole is short green and red. Leaf sheaths are persistent at the base and closely set scars on the corm. The inflorescence is globose at first (30 cm – 32 cm diameter) later drooping and elongating to one-third the length of the trunk. The bracts are orbicular, dark brown-red, reaching 30 – 32 cm in length, breadth and subtend dense biseriate rows each of 10 - 15 flowers. The fruits are subcoriaceous 7.5 - 8.0 cm long, 3.5 cm diameter more or less triangular and contain numerous dark brown seeds. The seeds are sub globose but angled by pressure, 0.8 – 1.3 cm in diameter¹⁵.

Flowering Month: July to September

Useful Part: Flower, pseudo- stem, seeds

Phytochemical Constituents: The polyphenolic compounds most ordinarily found in plant extracts are the phenolic acids, flavonoids and tannins. It has five naturally occurring flavonoids namely Gallic acid, caffeic acid, rutin, Ferulic acid and quercetin¹⁶.

Traditional Uses

Different parts of *E. superbum* are used to treat wide range of human diseases like appendicitis, cancer, diabetes, dog bite, dysuria, kidney stone, leucoderma, leucorrhoea, measles, psychosomatic disorder, stomach ache and venereal diseases. Fruits, flowers and pseudostem of *E. superbum* are used as vegetable in different parts of the country¹⁷.

TABLE I: DETAILS OF FIVE SELECTED PLANTS WITH THEIR MEDICINAL PROPERTIES

Scientific Name	Common Name(s)	Useful part	Phytochemical Constituents	Medicinal properties	References
<i>Heliotropium indicum</i>	Srihastini, Hastishundi, Vruschikali, Chanchachuphala, Bhurundi, Hathajodi, Ajeru	Whole plant	Pyrrrolizidine Alkaloids, Tannins and Saponins	Pacifies vitiated pitta and vata, ulcers, sores, wounds, skin diseases, insect stings, rheumatism, fever, cough, ringworm, erysipelas and eye pain	<i>Dash & Murthy, 2011; Dash & Abdullah, 2013</i>
<i>Stachytarpheta jamaicensis</i>	Blue porterweed, Blue snakeweed, Brazilian tea, Jamaica vervain, Joee, Tarfel	Leaf and stem	Coumarins, flavonoids, tannins and saponins	Antacid, analgesic, anti-inflammatory, hypotensive, antihelminthic, diuretic, laxative, lactagogue, purgative, sedative, spasmogenic, vasodilator, vulnerary, and vermifuge properties	<i>Idu et al., 2007</i>
<i>Paracalyx scariosus</i>	Nadinishpava, Ranghevada	Root and fruit	Tannin, scariosin, isorynchospermin, kaempferol, quercetin, kaempferol3-O-rutinoside, rutin	Improves taste, acts as appetizer, and astringent to the bowels, enriches the blood, cures biliousness, liver disorders, good for throat troubles, treating dysentery and leucorrhoea and also applied externally along with other drugs to reduce tumors.	<i>Ramaji et al., 2014</i>
<i>Ensete superbum</i>	Cliff banana, Bahuja, Chavaykela, Ran kela, Rock Banana, Wild Plantain, Jungle Kela, Chaveni, Rankeli	Flower, pseudo-stem, seeds	Phenolic acids, flavonoids Gallic acid, caffeic acid, rutin, Ferulic acid, quercetin) and tannins	appendicitis, cancer, diabetes, dog bite, dysuria, kidney stone, leucoderma, leucorrhoea, measles, psychosomatic disorder, stomach ache and venereal diseases	<i>Vasundharan et al., 2013; Khuroo et al., 2010</i>
<i>Cyanotis arachnoidea</i>	Grass of the Dew, Mor Tura	Root, leaves	20-Hydroxyecdysone	stimulating blood circulation, as a muscle and joint relaxant, and for relieving rheumatoid arthritis	<i>Zhou & Wu, 2006;</i>

E) MOR TURA

Fig. 5: Purple blue flowers of *Cyanotisarachnoidea* with yellow stamens

Botanical name: *Cyanotisarachnoidea*

Family: Commelinaceae

Vernacular Names:

English: Grass of the Dew; Konkani: *Mor Tura*

Habitat: It is native to Africa, southern Asia, and northern Australia. It is rarely found in the forests of Goa; it has been found on the mountains of Goa Karnataka State border.

Plant description

Grass of the Dew plant has furry violet blooms, dotted with yellow stamens. It is a perennial herb with fibrous roots. Main stem is undeveloped, short. Fertile stems arise from below the leaf rosette, diffuse, creeping, 20-80 cm. Leaves are in a basal rosette and cauline. Rosulate leaf blade are linear, 8-35 × 0.5-1.5 cm; cauline leaf blade on fertile stems much shorter, to 7 cm, abaxially rather densely arachnoid. Flowers arise in often several, both terminal and axillary heads, stalkless or on a stalk up to 4 cm. Bracts are 7-8 mm. Sepals are fused at base, linear-lance shaped, about 5 mm, webby on the underside. Petals are blue-purple, blue, or white, about 6

mm. Filaments are blue, cobweb-like. Capsules are broadly oblong, trigonous, about 2.5 mm, densely hairy at the tip¹⁸.

Flowering Month: June-September

Useful Part: Root, leaf

Phytochemical Constituents: 20-Hydroxyecdysone, an ecdysteroid, has been isolated from the roots of the plant and it is known to have anabolic effect thereby helping in muscle building and strengthening²⁰.

Medicinal uses

Grass of the Dew was used to cure the rheumatic infections. The roots are used as medicine for stimulating blood circulation, as a muscle and joint relaxant, and for relieving rheumatoid arthritis¹⁹. 20-Hydroxyecdysone found in the plant is also known to reduce blood sugar and lipid levels (Zhou and Yang, 1996).

II. CONCLUSION

India being a rich source of biodiversity many plants are being used as medicine for the treatment of various ailments. Most of the practitioners prepare and dispense their own recipes depending upon the availability of the various flora in that particular region, hence this requires proper documentation and research of all the available medicinal plants.

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