

Biodiversity of Medicinal and Aromatic Plants under High Altitude Areas of Andhra Pradesh

M.M. Naidu¹, T.Teja^{2*}, B.V.K. Bhagavan³, T. Rajashekaram⁴, K. Mamata⁵ and R. Naga Lakshmi⁶

^{1,2}HRS, Darsi-523247 A.P Dr. Y.S.R.H. University

^{3,5,6}HRS, Kovvur, A.P Dr. Y.S.R.H. University

⁴CRS, Tirupati, A.P Dr. Y.S.R.H. University

E-mail: ¹naidumalla65@gmail.com, ²tejahorticulture16@gmail.com, ³bvkb@gmail.com, ⁴trajasekharam@gmail.com, ⁵mamatha.kathimanda@gmail.com, ⁶galarnl@gmail.com

Abstract—Medicinal and Aromatic plants represent a consistent part of the natural biodiversity endowment of many states in the country. The important medicinal plants which are the natural inhabitants of high altitude and tribal zones of East Godavari and Vishakapatnam districts of Andhra Pradesh and are being widely utilized by the tribals. The role and contributions of medicinal plants to healthcare, local economies, cultural integrity and ultimately the well-being of people, particularly the poor have been increasingly acknowledged over the last decade. The demands of the majority of the populace for medicinal plants have been met by indiscriminate harvesting of spontaneous flora, including those in forests. This has resulted in severe loss of habitat and genetic diversity. The utilization of medicinal and aromatic plants as a source of fuel, building material, food, fodder and fibre in the country, however, led to a resurgence of natural product based industries and pharmaceutical products. This had been spurred by the interests of the developed countries for traditional medicine and natural products. To safeguard the existing diversity of these medicinal plants and to achieve sustainable development based on use of available genetic wealth, promotion and conservation of these species is of immense importance. The details of the medicinal uses of the plants are mentioned in this paper.

Keywords: Medicinal and Aromatic plants, tribals, high altitude areas, sustainable development.

1. INTRODUCTION

India is endowed with a rich genetic diversity of Medicinal and Aromatic plants. Despite the vast genetic diversity of these herbs only some plants have gained in the productivity and acceptability by the people. The less important remained uncared for and remained confined mainly to natural wild, semi-wild and semi-domesticated condition albeit with large ever increasing variability (Paddey *et al.*, 1998). These herbs are rich in a variety of chemical substances and with other medicinal properties. Apart from their nutritive and medicinal values, these herbs have excellent curative properties (Prajapathi *et al.*, 2003). They play a vital role in various traditional aspects of the local inhabitants. There are quite a large number of indigenous and underutilized

medicinal plants which are being used by the tribal inhabitants in the High altitude areas of Andhra Pradesh. Wide diversity of different medicinal plant species, serve as an indication to the rich genetic resources in forest areas (Pandey *et al.*, 1993). But their cultivation is very restricted and grown wild. Keeping the importance in view, the present study is conducted to identify and document the important medicinal plants.

2. MATERIALS AND METHODS

High Altitude and tribal regions in East Godavari and Vishakapatnam districts were surveyed for Medicinal and Aromatic plants. The information on plant identification and therapeutic usage of different medicinal plant species gathered from the local tribal people is presented below.

3. RESULTS AND DISCUSSION:

About twenty medicinal plants collected from high altitude areas of Andhra Pradesh were described along with therapeutic use and the details of the medicinal plants are furnished hereunder :-

Botanical Name: *Achyranthes aspera* Linn.

Local Name: Uttareni, Apamarga

Trade Name: Prickly chaff-flower plant

Plant Characters: A perennial herb grows to a height of 30-90 cm; stem round, pubescent; root strong; leaves simple, two in number per node. Abundantly available on bunds, barren lands and road sides.

Parts Used: Leaves, Roots and Seeds.

Uses: Flower stalk is used as purgative, pungent digestive, a remedy for piles, itch, abdominal enlargements and enlarged cervical glands. Juice of the twig applied to relieve tooth ache. The ashes with honey are given to relieve cough. Root powder

is used to cure night blindness. Juice of leaves mixed with a paste of dry ginger is applied to cure eye injuries of cattle.

Botanical Name: *Aegle marmelos* *Corr.*

Local Name: Bael

Trade Name: Maredu, Bilva

Plant Characters: A medium sized spinous tree; leaves 3-foliolate, leaflets 6x4 cm, ovate, acute; flowers in large axillary panicles, greenish white; fruits large, globose, berry with rough woody rind, green; seeds embedded in fleshy pulp. Flowering and fruiting occurs from March - May.

Parts Used: Root bark, fruits and leaves.

Uses: Unripe fruit is used as a remedy for diarrhoea and dysentery. Root bark is used in intermittent fevers and as fish poisons. Ripe fruit is tonic, astringent, restorative, laxative, good for heart and brain.

Botanical Name: *Alstonia scholaris* **Linn.** (R.Br.)

Local Name: Devils tree

Trade Name: Saphthaparni, Edakulapala, Edakulaponna

Plant Characters: Small tree, 4-10 m high, leaves 4-7 at each node, 9-12 x 2.5-3 cm, oblong, lanceolate, acuminate, very closely nerved, pale beneath; flowers white in terminal, sub-umbellate, dichotomous cymes; follicles single or in pairs, 9-10 x 0.7 cm, falcately curved.

Parts Used: Fruit and Stem bark.

Uses: The ripe fruit is used in syphilis, insanity, epilepsy and as a tonic. Stem bark decoction is used in fever, respiratory, leprosy, ulcer problems. Tender leaves in the form of poultice are good for ulcers with foul discharge.

Botanical Name: *Barleria prionitis* **Linn.**

Local Name: Yellow nail dye, Neelambaram, Mullagorinta, Gobbi

Trade Name: *Vajradanti*

Plant Characters: A perennial bush growing to a height of 1m; shoots have white bristles in pairs. Leaves ovate or elliptic, two at each node; flowers orange yellow in bunches at the end of shoot; fruits elliptic; seeds flat and round.

Parts Used: Whole plant

Uses: Entire plant has medicinal value is bitter, pungent, useful in ulcers, skin diseases, leucoderma, pains, itching, inflammations, bronchitis and diseases of teeth. Root is used as remedy for coughs.

Botanical Name: *Cassia angustifolia* **Vahl.**

Local Name: Sunamukhi, Sanai, Nelatangedu

Trade Name: *Senna*

Plant Characters: A small shrub, **60-90** cm in height; leaves paripinnate, leaflets **7-8 pairs**, glabrous, yellowish green; flowers yellow; pods greenish brown to dark **brown**; seeds **5-7**, obovate, smooth and dark brown.

Parts Used: Leaves and Pods

Uses: Leaves and Pods are used in constipation, loss of appetite, diseases of liver and spleen, indigestion, malaria, skin diseases, jaundice and anaemia.

Botanical Name: *Cassia fistula* **Linn.**

Local Name: Indian laburnum, Purging fistula, Amaltas, Rela, Kondra kaya, Aragvadamu

Trade Name: Golden Shower

Plant Characters: A moderate sized handsome deciduous tree, grows to 8-15 m height with greenish grey smooth bark when young and rough when old, exfoliating in hard scales; leaves pinnately compound, leaflets 4-8 pairs, ovate, acute, bright green, glabrous above, paler and silvery pubescent beneath when young, main nerves numerous; flowers bright yellow in lax pendulous racemes; fruits cylindrical pods, nearly straight, shiny, brownish black; seeds broadly ovate, horizontally immersed in dark coloured sweetish pulp.

Parts Used: Whole plant

Uses: Roots are useful in treating skin diseases like syphilis. Bark is laxative, anthelmintic, diuretic and is useful in boils, pustules, leprosy, ringworm, constipation. Leaves are laxative. Flowers are useful in skin diseases, pruritus, dry cough and bronchitis. Fruits are useful in flatulence, colic, inflammations, rheumatism, intermittent fever, strangury and ophthalmopathy.

Botanical Name: *Clitoria ternatea* **Linn.**

Local Name: Shankapushpi

Trade Name: Butterfly pea, Aparajitha, Gilagarnika, Dintana

Plant Characters: A perennial twining herb with terete stems and branches; leaves compound, imparipinnate, leaflets 5-7, elliptic, oblong; flowers blue or white, solitary, axillary or in fascicles, corolla papilionaceous; fruits nearly straight, flattened pods, sharply beaked; seeds 6-10, smooth, yellowish brown.

Parts Used: Roots, leaves and seeds.

Uses: The roots are useful in eye diseases, tubercular glands, retarded brain development, migraine, leprosy, leucoderma, ulcers, pulmonary tuberculosis. Leaves are useful in ear-pain, liver diseases and eruptions.

Botanical Name: *Coleus forskohlii* **Brig.**

Local Name: Coleus, Pashanabhedhi

Trade Name: Medicinal Coleus

Plant Characters: An annual or biennial plant, more or less succulent, 0.5 to 1 m tall with thick, carrot like brown tuberous roots (inset) and bluish flowers; stems and leaves are

hairy; flowers borne on perfect racemes, calyx is fine toothed, corolla pale blue, bilabiate, ovary with 4-segments, stigma bilobed; stamens declinate with united filaments at base. Roots are tuberous, upto 20 cm long, conical and aromatic.

Parts Used: Tuberous roots

Uses: Tuberous roots contain a diterpene "forskolin" (coleonol) and used against hypertension, glaucoma, asthma, congestive heart failures and certain cancers. Tubers are also used against obesity.

Botanical Name: *Curcuma angustifolia* Roxb.

Local Name: East Indian Arrow root, Palagunda

Trade Name: Country Arrow root

Plant Characters: Rhizomatous herb, grows to a height of 50-75 cm, *leaves large, broad, petiole narrow, flowers are yellow with rosy lip in spike inflorescence.*

Parts Used: Rhizomes.

Uses: Rhizomes contain starch and are useful in treating peptic ulcers and urinary troubles.

Botanical Name: *Euphorbia tirucalli* Linn.

Local Name: Round milk hedge, Teegajemudu, Kadajemudu

Trade Name: Milk bush

Plant Characters: Shrub, grows to a height of 2-5 m; leaves oval, two per node, drop off quickly; fruits small, split into three parts. Propagation is by cuttings.

Parts Used: Latex

Uses: Milky latex is useful to control cough, rheumatism, cold and nervous diseases, warts, tooth-ache and ear pain. In large doses, it is emetic, irritant and acrid.

Botanical Name: *Gymnema sylvestris* (Retz.) R.Br. ex Schultes

Local Name: Gudmar, Madhunasini, Meshasingi, Podapatri

Trade Name: Periploca of woods

Plant Characters: A large, woody, much branched climber with pubescent young parts; leaves simple, opposite, elliptic or ovate, more or less pubescent on both sides, base rounded or cordate; flowers small, yellow in umbellate cymes; fruits slender, follicles upto 7.5 cm long.

Parts Used: Leaves

Uses: Leaves are useful in curing inflammations, liver diseases, indigestion, constipation, jaundice, cardiopathy, conjunctivitis and leucoderma. Fresh leaves when chewed have the remarkable property of paralyzing the sense of taste for sweet and bitter substances for some time. It is popularly used against diabetes.

Botanical Name: *Lawsonia inermis* Linn.

Local Name: Cyress shrub, Mehendi, Gorintaku, Maidaku

Trade Name: Henna

Plant Characters: Evergreen shrub or tree growing upto 4m. It has narrow pointed leaves, clusters of small white or pink flowers and blue-black berries.

Parts Used: Roots, leaves, flowers and seed.

Uses: Henna is used against athlete's foot disease and fungal skin infections, burning of soles and palms, local inflammation and jaundice, mental disorders, rheumatism, hair tonic, leucoderma and spermatorrhoea. Flowers are useful cephalalgia, burning sensation, insomnia and fever.

Botanical Name: *Maranta arundinacea* Linn.

Local Name: West Indian arrow root, Palapindidumpa, Palagunda

Trade Name: Cultivated arrow root

Plant Characters: Rhizomatous herb. Grows to a height of 50-75 cm, leaf oval, flowers white.

Parts Used: Rhizome

Uses: Rhizome is useful in controlling dysentery, diarrhoea, indigestion, stomach-ache, respiratory diseases, cough and urinary troubles and also acts as an antidote for wounds caused by poisonous arrows.

Botanical Name: *Mucuna pruriens* Linn. DC.(*prurita* Hook.)

Local Name: Common cowitch, Cowhage, Pedda dulagondi

Trade Name: Cowitch

Plant Characters: Annual twining climber upto 5m long; leaflets trifoliate, 6-10 x 5-6cm, shiny and velvety beneath, rhomboid-ovate; flowers purple in axillary racemes; pods turgid, densely clothed with dark brown stinging and shiny bristles; seeds 4-6, white in colour, *Mucuna cochinchinensis* produces black seeds. Flowering and fruiting occurs during November - February.

Parts Used: Seeds and roots

Uses: Seeds are aphrodisiac, nervine tonic, also used in scorpion-sting. Pods are anthelmintic. Roots are purgative, prescribed for delirium in fever, strong infusion mixed with honey is given in cholera.

Botanical Name: *Oroxylum indicum* (Linn.) Vent

Local Name: Pampini, Dundilam

Trade Name: Indian Trumpet tree

Plant Characters: A tree of 7-8 m high, branched at top; leaves very large, 2-3 pinnate opposite pinnae, leaflets ovate or elliptic; flowers numerous, in larger racemes, 30-60 cm long, light purple. Produces very long pods of 50-75cm length, usually 2-6; seeds numerous, papery and scatter on pod drying.

Parts Used: Roots, leaves, fruits and seeds

Uses: Bark is acrid, bitter, pungent, astringent to the bowels, useful in fevers, bronchitis, intestinal worms, vomiting dysentery, leucoderma, asthma, inflammation and anal troubles. Fruit improves appetite. Powder made from the bark is useful to cure sorebacks of cattle.

Botanical Name: *Plumbago* spp.

Local name: White flowered lead wort - *P. zeylanica* Linn. (Tella Chitramulamu), Rosy flowered lead wort - *P. rosea* Linn. (Yerrachitramulamu) Blue flowered lead wort - *P. capensis* Thumb.

Trade Name: Lead wort

Plant Characters: Diffused sub-erect shrub; leaves cordate, triangular, ovate, glabrous, petiole 5-8 cm long, slightly pubescent; flowers white and red, axillary or terminal racemes.

Parts Used: Roots and leaves

Uses: Root is diuretic, expels phlegmatic secretions and is useful in rheumatism which is useful in curing leprosy and other skin diseases of an obstinate character. The drug is apt to cause abortion. Even eating the leaves is said to cause similar action. A cold infusion of the root is used for influenza.

Botanical Name: *Psoralea corylifolia* Linn

Local Name: Bakuchi, Bavanchalu

Trade Name: *Babchi*

Plant Characters: Erect, annual herb, that grows upto 30 - 60 cm tall under *natural* conditions and upto 160 cm under cultivation. The plant branches profusely; stem and branches are covered with conspicuous glands and white hairs, *it* bears simple leaves, broadly elliptic, rounded and mucronate at the apex. Inflorescence is axillary, solitary raceme with 10-30 flowers; calyx 3-4 mm long and hairy outside, corolla is bluish-purple; carpel is unilocular and bears a single seeded pod.

Parts Used: Seeds

Uses: Seeds are used in the treatment of leucoderma, leprosy, psoriasis, treatment of intestinal amoebiasis, healing of wounds and ulcers. It has antimicrobial, antifeedant and insecticidal activities.

Botanical Name: *Sterculia urens* Roxb.

Local Name: Tapasi, Kovelajiguru

Trade Name: Gumkaraya

Plant Characters: A large tree, 5-15 m height; leaves large, crowded at the ends of branches, shallowly palmately lobed, glabrous, lobes 5; flowers light **yellow** arising in clusters from ends of the branches; seeds black.

Parts Used: Leaves

Uses: Leaves and tender branches steeped in water yield a mucilaginous *extract* useful in pleuro-pneumonia in cattle. The gum is a useful medicine in *throat* infections.

Botanical Name: *Strychnos nux vomica* Linn.

Local Name: Poison nut, Nux vomica, Mushini chettu, Vishamushti

Trade Name: Snake wood

Plant Characters: Deciduous tree, 15m high; leaves elliptic, ovate, orbicular, glabrous, shining above; flowers pale white,

1-2 cm long in corymbose, axillary; fruit 4x4 cm, globose, orange when ripe; seeds 3-5 flattened. More common along foot hills of deciduous forests.

Parts Used: Leaves, seeds, roots and bark

Uses: Leaves are applied as a poultice on sloughing wounds and maggot- infested ulcers. Roots and bark are used in fevers. An infusion of the bark is prescribed for epilepsy. Seeds are useful in a wide range of fevers, ulcers, dysentery, dyspepsia, piles and excited mental conditions.

Botanical Name: *Tinospora cordifolia*.

Local Name: Amritavalli

Trade Name: Guduchi, Giloe, Tinospora, Tippa teega

Plant Characters: A perennial climber grows upto a height of 10m. It produces linear thread like twines from the stems which on touching the ground change to roots. Leaves one at each node, heart shaped without pubescence; male and female flowers on different stems, light greenish to light yellowish; fruits round, red when ripe. Stem surface appears to be studded with warty tubercles and fissured.

Parts Used: Stem

Uses: It is useful in all kinds of fevers, gout, anaemia, asthma, jaundice, leprosy, piles, cardiac problems and swellings.

Source: *Kirthikar and Basu, 1987.*

4. CONCLUSION

The most striking feature of the Medicinal plants is that they need a specific microhabitat for their growth and proliferation which vary in different habitats. In order to prevent their extinction, it is necessary to grow and conserve the species as per their favourable habitat, which acts as a genepool. The fragile habitats should also be conserved as nature reserves to ensure sustainability of the ecosystem and thereby conserving the fast dwindling germplasm.

5. ACKNOWLEDGEMENTS

The co-operation of tribal farmers in providing the information is acknowledged.

REFERENCES

- [1] Kirtikar, K.R. and Basu, B.G., "Indian Medicinal plants". Vol-IV. International book publishers, Dehradun. Paddey, A.K and Bisaria, A.K., "Rational Utilization of Medicinal plants- a tool for conservation", *Indian farming*.124,2003:195-205.
- [2] Pandey, G., Sharma, B.D., Hore, D.K. and Rao, N.V., "Indigenous minor fruit genetic resources and their marketing status in North-Eastern hill of India", *Journal of Hill Research*, 6(1), 1993, 1-4.
- [3] Prajapathi, N.D., Purohit, S.S., Sharma, A.K. and Kumar, T., "A Hand book of Medicinal Plants. A complete source book", Agrobios, Jodhpur, India, 2003,45-46.