

Some Important Medicinal Plants Used Widely in Southwest Bengal, India

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Abstract: The present article reflects 30 important medicinal plant species of Southwest Bengal, India with their botany, medicinal uses and ecological perspectives in brief. Plants were collected from home gardens, forests, wasteland, shrubbery and other places of ecological importance in the study sites. It covers phenology of plants and plantation treatment of propagules during nursery preparations. It would help the researchers better to use this work as a model to generate data from natural sites to plan the habitat management and to generate conservation strategies. It would help the environmentalists to conserve species in near future by formulating model for eco-sustenance of species as well as for the habitat conservation in other places.

Keywords: Some Medicinal plants, Southwest Bengal, Ecology, Uses.

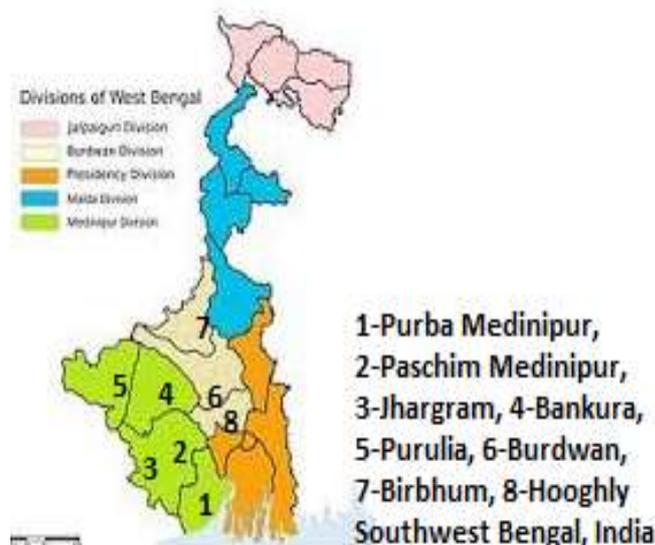
I. INTRODUCTION

Medicinal plants are just like other general plants though their uses are known by people, as people handling these since dates back and uses were traditional. Now the research and inventions indicating the active principles of the medicinal plants and the efficacy through applied field. Till date, the local medicine men and herbalists use these plants for medicinal purposes but the compensation and dose of the plant parts are different even the application time and dose vary from site to site. Perhaps, the deviation is due to large geographical variations with the variations of factors and traditional knowledge (TK) of different ethnic people over the globe. The morphological variations of species thus determining the efficacy of the selected plant is due to the change of phenology even the ingredients deposited by these plants due to climatic conditions. From temperate to subtropical even from coastal to arctic the plant and the plant products are varied. The same species grow in varied geographical habitats produce different degree or concentration of chemicals as phyto-chemicals. The dose and application formulations of these plant parts are varied as the use pattern and knowledge based data system is different. All the attributes purely governed by specific environmental factors. The size and shape of the geographical range of a species are a measure of its interaction with the specific environment in the area. It varies from one micro site to another site because of the limiting factors. No species can continually expand its area and sooner or later the range ceases to expand (Mani, 1995). Therefore, there is a change of specification of plant species which need immediate study.

Southwest Bengal has tropical dry deciduous forest and many valuable medicinal plants which have been reported from these forests time to time. However, a very few attempts have been made to study the aspects on these medicinal plants in varied physiognomic characters to record the resources from taxonomy, ecology and conservation biology or from forestry. But indeed it is so tiny that a wide spectrum of such study is essential to know the scenario of Traditional Knowledge based conservation biology (TKBCB) to conserve the nature and natural resources in such degraded ecosystem. Remembering these themes in mind, some aspects of these much valuable medicinal plant species were studied from Southwest Bengal, India. Ecological status, botany and uses even survival of these medicinal plants of Southwest Bengal have been made. Therefore, the present study has been conducted to understand the actual scenario of medicinal plants grown in and around Southwest Bengal with a selective number of medicinal plant species.

II. AREA UNDER STUDY

The study area falls under Southwest Bengal part of West Bengal, India. It harbors a vast tract of lateritic forest except Purba Medinipur, Nadia, Hooghly, Howrah, 24 pgs (North and South), large number of forest species including plantation stands in different sites. Presently the District has been divided in to two i.e. Jhargram and Paschim Medinipur while Burdwan is divided in to Asansol and Burdwan. Other districts were taken for study was Birbhum, Purulia and Bankur. The sites were demarcated as forested lands, plantation stands, degraded land, agricultural lands, waste land and river banks. These places were considered for critical study in Southwest Bengal (Map 1) in India.



Map 1. Study Area in Southwest Bengal, India (Source: www map India)

III. MATERIALS AND METHODS

Extensive field visits were conducted to different habitats of the study sites which fall in between erstwhile Midnapore and Jharkhand, Purulia, Bankura, Burdwan (erstwhile) and Birbhum districts excluding the other districts in Southwest Bengal namely, Nadia, Hooghly, Howrah, 24 Parganas (South and North) and Murshidabad in West Bengal. The study sites having different zones, like natural forests, degraded land, plantation stand filled with *Eucalyptus*, Gamhar, and Teak, river banks with Arjun(*Terminalia arjuna*), Sissoo (*Dalbergia sissoo*) plantation, highland, rangelands, banks of ponds, creeks, small canals and low lying land have been taken for consideration to study the quality of the ecosystem. The entire coastal area has low land plantation of species like *Eucalyptus*, *Acacia*, *Cassia*, *Delonix*, *Peltophorum*, and *Ailanthus* along with some exotic ornamental species (*Spathodea*, *Jacaranda* sp.). The orchard species like *Anacardium occidentale* is also found here in the gardens and boundary areas of self occupier's land of the forest department (FD). The sites fall under Paschim Medinipur, Purba Medinipur, Bankura, Purulia, Soil Conservation Divisions, Bankura and Panchet Soil Conservation Division, Purulia in the west and adjacent districts including social forestry Division in other sites of respective forest Divisions in other Districts nearer to Jharkhand and Odisha state. The sites have low fluctuations and high eco-niche have been omitted to avoid the biasness of the data. The quadrats as well as transects were taken for monitoring vegetation in late summer, monsoon and winter also as per the latest ecological methods. For eco-restoration study, vegetation monitoring was done following the concept of Greipsson, 2011. Parameter taken for stability study and concept of structure and function of elements in ecosystem along with dynamics of vegetation idea accepted from Dash and Dash, 2010. The management of the policymaker and similar management strategies were taken from internet to get idea regarding the present day scenario of forest vegetation including soil. Books, Journals and magazine including registers of different departments were also consulted for Literature work. Interviews and cross references were studied using Participatory Rural Appraisal (PRA) technique in field. Plant specimens from field were also collected and processed for presentation as herbarium specimens and for identification using botanical and ecological standard. Specimens were carefully studied, critically examined and cross checked with the specimens housed in the CAL herb, BSI, Shibpore, Howrah. For conformity of specimens, local floras were consulted (Prain, Vol-I-II, 1903; Hains, Vol-I-III, 1921, Hooker, 1892-1897). To consult some publications, taxonomy and similar research papers from website have been downloaded and followed by Ghosh, 2014; Das and Das, 2014; Ghosh and Das, 2014, Das, 2014b, Das, 2017. Some books published by West Bengal Forest Directorate, Research Wing (Anonymous 2005, 2010), BSI, Kolkata (Anonymous 1997) have also been consulted to analyze the report along with our collections that the plants are either medicinal or not. Methodology used for abundance study followed by Groom *et al.*, (2006) along with the thesis of Das (2007). Relevant literature have been collected and consulted for the preparation of the manuscript. The voucher specimens were housed in our custody and after preparation will be deposited in the departmental herbarium. For ecological study literature used was ¹⁰⁻³⁹ published time to time. General discussion on medicinal plants literatures ¹⁻⁹ were used extensively. Information on medicinal plants of study areas in Southwest Bengal are given below:

1. APANG

Scientific Name: *Achyranthes aspera* L.
Family: Amaranthaceae
Vernacular Name: Apang, Apamarg (Bengali), Fig. 1

Botany: An erect annual or perennial herb with woody base, under shrub. Branches pubescent. Leaves decussate, elliptic to ovate-elliptic, acute to obtuse. 3-7 cm long, finely tomentose. Flowers greenish-white, many on spikes, on maturity deflexed, staminodes in lax elongated spikes. Bracteoles ovate ending in a spine. Tepals 5, stamens 5, Fruits utricle, broadly oblong.

Flowering and Fruiting: October to February

Medicinal Importance: Entire plant used in various purposes. Used in dropsy, dyspepsia, dysentery, diseases of blood, piles, boils, eruption, colic (pain due to spasmodic contraction of the abdomen), gonorrhoea, pneumonia, ascities (abdominal dropsy); Leaf paste applied to stop bleeding, dried plant infusion given to cure burning sensation of urination of women; paste and long pepper is taken in case of dog bites, paste and kusum oil (*Schleichera oleosa* of Sapindaceae) applied to cure sores on head, leg and ears of children. Fresh root is taken to cure allergy, root paste and worm water is given to women to stop bleeding after abortion, root ash with long pepper and country liquor made in to paste and given to women as contraceptive at the end of menstruation period. Dried seed powder with rice washing water to cure piles (Anonymous, 2012).

Distribution: Roadside hedges, waste places, shrubberies, bamboo garden, open tract of forest.

Propagation: By immediate placement of seeds in sand pit.

Sterilization: Surface sterilization by rectified spirit followed by distilled water wash.

2. BASAK

Scientific Name: *Adhatoda zeylanica* Medic.
Synonym: *Justicia adhatoda* L.
Family: Acanthaceae
Vernacular Name: Basak (Bengali), Fig. 2

Botany: Perennial shrub of common type. Leaves entire, elliptic-lanceolate, 10-18 cm long, acuminate with long petiole. Flowers white in dense spikes, with bract and bracteoles. Corolla 2-lipped, imbricate. Stamens 2, anther cells suppressed, mucronate. Fruits capsule, pubescent, clavate. Seeds orbicular oblong.

Flowering and Fruiting: January to March

Medicinal Importance: Leaves used in rheumatism, piles, diarrhoea, dysentery, catarrh. Juice with honey used in chronic bronchitis, cold and cough. Paste with black pepper used to treat leucoderma. Dry leaves smoked in asthma. Flowers used in ophthalmia, bark used in acidity, indigestion, heart diseases.

Distribution: Roadside hedges, shrubberies, premises of villagers.

Propagation: By immediate placement of stem through cuttings.

Sterilization: For stem rectified spirit followed by distilled water.

3. UCHUNTI

Scientific Name: *Ageratum conyzoides* L.
Family: Asteraceae (=Compositae)
Vernacular Name: Uchunti, Dochunti, Ajgandha (Bengali), Fig. 3

Botany: Erect annual herb. Stem erect, branched, terete, hairy. Leaves opposite, upper alternate, 6-10 cm long, ovate, crenate, acute, hairy on both sides. Flowers tubular and are in heads, homogamous, pale blue. Involucre of bracts 2-3 seriate. Pappus of 5 scales present, achiness angled, black.

Flowering and Fruiting: Flowers round the year.

Medicinal Importance: Used in ague, annual prolapser, fever, renal and vesicle calculi. Decoction used in diarrhoea, dysentery, colic with flatulence and other gastro-intestinal ailments. Root is important to cure dysentery, also used as anthelmintic. Leaf decoction applied on wounds as styptic, skin diseases, leprosy, boils.

Distribution: In roadside shrubberies, waste places, occasionally at the villager's garden as weed but frequency high.

Propagation: By immediate placement of seeds after sterilization.

Sterilization: For seeds rectified spirit.

4. KALMEGH

Scientific Name: *Andrographis paniculata* (Burm. f.) Wall ex Nees

Family: Acanthaceae

Vernacular Name: Kalmegh (Bengali), Fig. 4

Botany: Erect perennial herb. Stem swollen, 4 angled, Leaves glabrous, simple, opposite, lanceolate, 5-8 cm long, acute, entire. Flowers in axillaries or terminal racemes, white with purple tinge. Petals imbricate. Stamens 2, anther cells bearded. Capsule linear oblong, suppressed internally provided with retinacula/jaculator. Seeds minute compressed and yellow coloured.

Flowering and fruiting: October to March.

Medicinal Importance: Used as bitter tonic, febrifuge and plant astringent. Extract is used in liver diseases and in dysentery (Mishra *et al.*, 2004). Usable parts are whole plants and leaves.

Leaves: used to relieve griping; in case of irregular stools, loss of appetite; paste made into tablets and consumed to improve digestion and liver function.

Roots: Given to children to cure general debility.

Whole plant: Used in fever, general debility, dysentery, dyspepsia, soaked in water for a night and the water is taken in empty stomach to cure scabies, leprosy and whooping cough; improves liver functioning.

Distribution: In roadside shrubberies, waste places, occasionally at the villager's garden, floor of the forest, margin of streams, and river bed and canal side waste land with moderately high frequency of distribution.

Propagation: By immediate placement of seeds after sterilization with chemicals.

Sterilization: For seeds rectified spirit.

5. SATAMULI

Scientific Name: *Asparagus racemosus* Willd.

Family: Asparagaceae (=Liliaceae)

Vernacular Name: Satamuli, Satamul, Satavari (Bengali), Fig. 5

Botany: Perennial scandent undershrub. Stem spiny, woody. Roots tuberous, modified, narrow, elongated, fasciculated. Cladodes subulate, to 3 cm long, sulcate. Leaves scale like, 2.5 mm long. Flowers white, small, fragrant, numerous in racemes. Fruits globose berry, scarlet when ripe. Seeds black, ellipsoid globose.

Flowering and Fruiting: December to February

Medicinal Importance: Tuberous roots used in blood dysentery, haematuria, epilepsy, filarial, nocturnal emission, biliary colic, haematemesis, drying of mother's milk, aphomia, strangury. Paste applied on wounds, infusion to cure sunstroke and dysentery. Dried powder with goat milk acts as galactagogue. Dried powder with ghee given to children to improve eye sight. Leaves used to treat night blindness. Young shoot used in diabetes, dropsy, cardiac and urinary disorders.

Distribution: Inside the roadside hedges, forest hedges, shrubberies, in garden.

Propagation: By immediate placement of seeds followed by watering.

Sterilization: For seed rectified spirit followed by distilled water.

6. PEET JHANTI / KANTAJHANTI

Scientific Name: *Barleria prunitis* L.

Family: Acanthaceae

Vernacular Name: Kantajanti/ Peetjhanti (Bengali), Fig. 6

Botany: Prickly undershrub. Stem spiny also. Leaves up to 10 cm long, elliptic, bristle-tipped. Flowers yellow, in spikes; bracts foliaceous, bracteoles linear. Calyx lobes 4, corolla lobes 5, subequal, imbricate. Stamens 2 perfect, 2 rudimentary. Fruit capsule, ovoid.

Flowering and Fruiting: January to march

Medicinal Importance: Whole plant decoction is used to cure dropsy, paste with karanja oil (*Pongamia pinnata* Vent.) used to cure swellings of legs. Roots used as tonic, diuretic, febrifuge and expectorant, used to treat pimples, swellings of joints. Leaves and leaf juice given to cure catarrhal fever of children, eye diseases, and juice applied to treat cracking soles of feet, juice and black peeper powder applied to treat paralysis, infusion used in cough and toothache. Dried bark is used as powder to the children to treat whooping cough.

Distribution: Roadside hedges, found as an escape.

Propagation: By immediate placement of seed/tuberous roots

Sterilization: For seed rectified spirit followed by distilled water.

7. NAYANTARA

- Scientific Name:** *Catharanthus roseus* (L.) G. Don.
Synonyms: *Vinca rosea* L.; *Lochnera rosea* (L.) Reichb.
Family: Apocynaceae
Vernacular Name: Nayantara, Chirabasanta (Bengali), Fig. 7
Botany: Plant as perennial herb. Leaves opposite, elliptic to obovate-oblong. 5-6cm long, entire, glabrous. Flowers white to rose-coloured, calyx free below. Corolla hypocrateriform, tube swollen below mouth. Stigma dumbbell shaped. Fruits pair of follicles 2.5 cm long usually glabrous. Seeds black rugose.
Flowering and fruiting: Round the year.
Medicinal Importance: entire plant: Juice taken in empty stomach to cure diabetes, used to treat diabetes mellitus, hypertension, leucorrhoea, leukemia, intestinal worms.
Root paste applied to cure septic wounds, decoction and long peppers used to treat fever, again used to treat asthma and cancer. Leave juice taken in empty stomach in the morning to reduce high blood pressure mixed with water given to treat blood dysentery, given to babies in griping pain; warm leaf paste used to treat piles. Latex applied to cure cancerous wounds.
Distribution: In roadside, waste places, occasionally at the villager's garden as weed but frequently planted as ornamental one.
Propagation: By seeds after sterilization with chemicals.
Sterilization: For seeds rectified spirit.

8. THANKUNI

- Scientific Name:** *Centella asiatica* (L.) Urban.
Synonym: *Hydrocotyle asiatica* L.
Family: Apiaceae (=Umbelliferae)
Vernacular Name: Thankuni, Manduki (Bengali), Fig. 8
Botany: Small, slender, creeping herb. Leaves alternate, orbicular-reniform, 1.5-4 cm long, glabrous, base cordate. Flowers are in simple umbel, sessile to sub-sessile, pink. Fruits with ridges, base broad.
Flowering and fruiting: March to May
Medicinal Importance: Leaves used in fatigue, bloodless, weakness, excessive sweating, constipation, indigestion, loss of memory, irregular menstruation, cold and cough, dysentery, jaundice, fever, mouth ulcers, leprosy, and to improve glaze of the skin. It is used in insomnia, cardiac debility, epilepsy, asthma, abdominal disorder and in fever.
Distribution: In marshy places.
Propagation: By seed and from whole plant (Runner)
Sterilization: For seed rectified spirit after removal fruit coat.

9. DURBA/DOORVA

- Scientific Name:** *Cynodon dactylon* (L.) Pers.
Synonym: *Panicum dactylon* L.
Family: Poaceae (=Graminae)
Vernacular Name: Durba/Doorva (Bengali), Fig. 9
Botany: Small perennial grass with slender creeping culms. Leaf base glaucous, acuminate, sheath smooth, ligule has a rim of hairs. Inflorescence spike 2-8 digitate, green or purplish tinged. Rachis compressed. Lemma as long as the spikelet. Palea a little shorter than lemma, 2-nerved, liner-oblong, obtuse. Fruits caryopsis.
Flowering and fruiting: February to May
Medicinal Importance: Juice anti-catarhal, demulcent, antidiarrhetic, antipyretic, astringent, diuretic, laxative, stypic. Used to treat anasarca, haematuria, ophthalmia, haemoptysis, haemorrhoid, cephalagia, leprosy, cholera, summer diarrhoea, dysentery, general debility, dropsy, insanity, conjunctivitis, hystertia, ulcerative colitis, colic, flatulence. Fresh juice applied to cuts and wounds. Cold infusion used to stop bleeding from piles and dysuria. Paste applied to stop bleeding from nose, fresh cuts and wounds. Root decoction used in dropsy, vesicle calculus, secondary syphilis, bleeding piles, chronic gleet (Anonymous, 2012).
Propagation: By seed and from whole plant (Runner)
Sterilization: For seed rectified spirit after removal fruit coat.

10. MUTHA

- Scientific Name:** *Cyperus rotundus* L.
Family: Cyperaceae
Vernacular Name: Mutha (Bengali), Fig. 10

Botany: Perennial herb without hairs, creeping rhizome or horizontally spreading rhizome underneath the substratum. Leaves shorter than stem, narrowly linear, acuminate, and flat 1-nerved. Spikelets are reddish brown at maturity. Flowering glumes are black-reddish to pale brown, 3-7 nerved stamens three, stigma 3, nuts brown. Flowering and fruiting: July to November

Medicinal Importance: Roots used to treat leprosy, fever, blood disease, biliousness, pruritus, pain epilepsy, ophthalmic, dyspepsia, urinary concretions, diarrhoea, and stomach complaints. Fresh juice applied to hands and feet in case of burning sensation, root boiled in water and taken to cure fever with thirst, juice boiled in water and taken to cure fever with thirst, juice boiled in ghee and applied as ointment in ulcers.

Distribution: In margin of sal forest, roadside shrubberies, waste places.

Propagation: By seeds.

Sterilization: For seeds rectified spirit.

11. SALPANI/SALPARNI

Scientific Name: *Desmodium gangeticum* (L.) DC.

Family: Fabaceae

Vernacular Name: Salpani, Salparni (Bengali), Fig. 11

Botany: Under shrub. Stem with appressed hairs. Leaves 1-foliolate, stip., ovate or oblong-ovate, 4-9 cm long, acute. Flowers white or violet, in racemes, bracteates. Pod 6-8 joined, with hooked hairs.

Flowering and fruiting: July October

Medicinal Importance: Roots used to treat chronic fever, chronic affection of the chest and lungs, piles, asthma, bronchitis, vomiting and nausea. Decoction of whole plant is given to treat erysipelas (An acute febrile disease associated with intense skin inflammation caused by a haemolytic streptococcus) and general debility.

Distribution: In sal (*Shorea robusta*) forest, roadside shrubberies, waste places.

Propagation: By seeds.

Sterilization: For seeds rectified spirit.

12. BILATI DHONE

Scientific Name: *Eryngium foetidum* L.

Family: Apiaceae

Vernacular Name: Bilatidhone (Bengali), Culentro, Mexican Coriander, Long Coriander, Fig. 12

Botany: Tropical perennial and annual herb. The name of the plant literally translated from latin is 'foul smelling thistle'. It attains height of about 27 cm (on and from 4 cm) with a basal rosette leaves. Tap root fusiform with fibrous roots. Stem green. Basal leaves numerous with short petiole. Blade long (5-25 cm X 1.2 -4 cm.), entire, lanceolate, base cuneate, apex obtuse. Upper leaves sessile, opposite, deeply spinulose-serrate to parted. Inflorescence divaricately trifurcate, flowers heads cylindrical, calyx teeth ovate-lanceolate, acute, petals white or pale yellow. Fruits ovoid covered with tubercles.

Flowering and Fruiting: April to December

Medicinal Importance: It is used widely as culinary agent. Traditionally has been used for burns, earache, fever, hypertension, constipation, fits asthma, worms, infertility complications, snakebites, diarrhoea and malaria. Roots used as stomachic. It is popular over the state, in hill of Darjeeling, people use the plants round the year.

Distribution: Roadside hedges, forest hedges, shrubberies, premises of villagers.

Propagation: By immediate placement of seed/tuberous roots

Sterilization: For seed rectified spirit followed by distilled water.

13. AYYAPAN

Scientific Name: *Ayapana triplinervis* (M. Vahl.) R. King & H. Robinson

Synonym: *Eupatorium ayapana* Vent., *Eupatorium triplinerve* Vahl.

Family: Asteraceae (Compositae)

Vernacular Name: Ayapan/Ayyapan/Aiapana (Bengali), Fig. 13

Botany: Perennial herb with shortly divaricated branches, slender and red coloured. Leaves opposite, linear lanceolate, with acute apex and short petiole. Stem glabrous, Flowers pale pink.

Flowering and Fruiting: February to June

Medicinal Importance: Haemostatic; used in haematemesis, jaundice, dysentery, intestine ulcer, low blood pressure, regains beauty lost due to dyspepsia. It is used as tonic, laxative. A hot infusion is emetic and diaphoretic. Decoction is antiseptic, haemastatic, use to treat foul ulcers. Aqueous extract of dried leaves is a cardiac stimulant. Leaves contain Herniarin, a methoxy analog of umbelliferone, while its essential oil contains thymohydroquinonedimethyl ether.

Distribution: Rare in medicinal plant garden, private garden etc.

Propagation: By immediate stem cuttings.

Sterilization: Rectified spirit for cuttings.

14. LALKERU/DUDHIA

Scientific Name: *Euphorbia hirta* L.

Synonym: *Euphorbia pilulifera* L.

Family: Euphorbiaceae,

Vernacular Name: Lalkeru, Dudhia, Bara dudhe, Dugdika (Bengali), Fig. 14

Botany: Erect herb or decumbent herb with milky latex. Stem terete, clothed with yellowish red crisped hairs. Leaves elliptic oblong with unequal leaf bases, sparsely hairy above, hispidly hairy and pale beneath. Involucres many, stalked, crowned in small, axillary shortly peduncled cymes, glands few, minute, red. Fruits capsule, appressedly hairy. Seeds ovoid trigonous.

Flowering and Fruiting: March- September

Medicinal Importance: Plant juice used in dysentery, diarrhoea, colic, bowel complaints, cold and cough of children, conjunctivitis. Latex used on ringworms, infection in nail corners, warts, gonorrhoea, sores etc. Roots used as galactagogue. Leaf juice applied in amoebic dysentery.

Distribution: Common in wasteland, in vegetable garden, open field everywhere.

Propagation: By immediate cuttings and placement them in sand for 4-6 days with proper watering.

Sterilization: For seeds rectified spirit and for cuttings rectified spirit and distilled water washing.

15. SADA SANKHAPUSHPI

Scientific Name: *Evolvulus nummularius* L.

Family: Convolvulaceae

Vernacular Name: Sada Sankhapushpi, Bhumisusni, Bhuikamri (Bengali), Fig. 15

Botany: Prostrate herb with profusely spreading branches over the substratum and developing roots at the nodes for fine attachment. Leaves are alternate, 1.6 to 2cm long, sub-orbicular to broadly oblong, glabrous, retuse. Flowers are white, as solitary axillaries one, Fruits capsule 4-valved, sub-globose with short stalk. Seeds- 2, glabrous.

Flowering and Fruiting: October to December.

Medicinal Importance: Whole plant decoction used to treat amoebic dysentery.

Distribution: Common in forest and in roads and in open field everywhere.

Propagation: By immediate cuttings and placement them in sand for 6-8 days with proper watering.

Sterilization: For seeds rectified spirit and for cuttings rectified spirit and distilled water washing.

16. ANANTAMUL

Scientific Name: *Hemidesmus indicus* (L.) R. Br.

Family: Asclepiadaceae

Vernacular Name: Anantamul (Bengali), Fig. 16

Botany: Twining and profusely branched shrub. Stem striate, glabrous, slender. Phyllotaxy of leaves opposite, leaves oblong-lanceolate, entire, acute, glabrous, to 7 cm long. Flowers small in axillary cymes, corolla rotate, green outside and deeply purple within, valvate. Filaments free, anther-tips connate, pollen adhering in pairs. Fruits follicles, slender, striate, glabrous, seeds black.

Flowering and Fruiting: August to October.

Medicinal Importance: Roots are used broadly which are valuable remedy for constitutional debility and kidney troubles; useful in case of appetite, diarrhoea, dyspepsia (indigestion) fever, leucorrhoea, chronic rheumatism, skin diseases, syphilis (A chronic venereal disease), chronic cough, piles, ulcers, stone kidney, root powder mixed with cow's milk given in case of scanty and highly coloured urine; also used to promote production of breast milk, to improve taste and to remove bad odour of the body, combination with other medicinal herbs used for elephantiasis, hemiplegia (Paralysis of one side of the body) nausea and vomiting.

Distribution: Common in forest floor and in open land, waste land jungle and in village shrubberies.

Propagation: By immediate cuttings and placement of stem in sand during monsoon.

Sterilization: For seeds rectified spirit and for cuttings rectified spirit and distilled water washing.

17. GARURBRAHMI

Scientific Name: *Mecardonia procumbens* (Mill.) Swall

Synonyms: *Herpestis peduncularis* (Benth.) Small., *Herpestis procumbens* (Mill.) Urb.

Family: Scrophulariaceae

Vernacular Name: Garurbramhi (Bengali), Fig 17

Botany: Erect or prostrate annual or perennial herb often branched from the base. Rooting at lower nodes of the plant where the substratum is attached. Stem sharply quadrangular and glabrous. Leaves glabrous, toothed, elliptic to ovate-elliptic, 10-12 x 6-12 mm, with or without short petiole. Flowers axillary, solitary, pedicel thin, glabrous, 4-6mm long, bracts 2-4 mm long, entire, sepals free, acute base, glabrous 5 lobed, 6-10 mm long, corolla bilabiate, yellow with purple lines on upper leaves, slightly longer than the calyx. 7-7.5 x 6 mm, upper leaf emerginate, tube 5- 5.5 x 2-4mm. Stamens didynamous, partly adnate to floral tube, anther cells divaricate, ovary superior, style filiform, curved at apex, fruit capsule, obscured by persistent sepals, seeds numerous, greenish brown.

Flowering and Fruiting: June to September

Medicinal Importance: The plant is brain stimulant as well as neuro-stimulant.

Distribution: Roadside, forest hedges, shrubberies, grassland, sand dunes, stream beds, along tracks etc.

Propagation: By immediate placement of seeds in sandy beds.

Sterilization: Seed treatment by rectified spirit followed by distilled water.

18. PATHARKUCHI

Scientific Name: *Kalanchoe pinnata* (Lam.) Pers.

Synonym: *Bryophyllum pinnatum* (Lam.) Kurz., *Bryophyllum calycinum* Salisb.

Family: Crassulaceae

Vernacular Name: Patharkuchi (Bengali), Fig. 18

Botany: Erect succulent herb. Stem terete, with purple streak, glabrous. Leaves opposite decussate, simple at base, pinnate above, fleshy. Foliar buds with adventitious roots common. Flowers many, reddish green, pendent in spreading panicles. Stamens 8, hypogynous scales subquadrate. Follicles enclosed in persistent membranous drooping calyx. Seeds smooth.

Flowering and Fruiting: January to March

Medicinal Importance: Leaves used to treat diabetes, cold, cough, urinary troubles, haematemesis, indigestion, colic in children, hysteria. Fresh crushed leaves taken once daily to treat tumour. Juice taken for flatulence.

Distribution: Roadside, forest hedges, shrubberies, grassland, sand dunes etc.

Propagation: By immediate placement of leaves in sandy/clayey beds followed by watering.

Sterilization: Leaf sterilization by rectified spirit followed by washing through distilled water.

19. PUDINA/MENTHA

Scientific Name: *Mentha piperita* L.

Family: Lamiaceae (Labiatae)

Vernacular Name: Pudina, Mentha (Bengali), Fig. 19

Botany: Erect annual herb. Leaves alternate, 6-10 cm long, ovate, crenate, acute. Flowers tubular and are in heads, homogamous, pale blue. Involucre of bracts 2-3 seriate. Pappus of scales present, achiness angled, flowers round the year.

Flowering and Fruiting: Not seen

Medicinal Importance: Carminative, gastric stimulant, antiseptic, stomachic, used in nausea, flatulence, cold, cough, sickness, vomiting, local pains, headache, menstrual colic (Das, et al., 2010).

Distribution: In roadside shrubberies, waste places, occasionally at the villager's garden as weed but frequency low.

Propagation: By immediate stem cutting followed by sterilization with chemicals.

Sterilization: For stem surface sterilizer.

20. BANTULSHI

Scientific Name: *Ocimum americanum* L.

Family: Lamiaceae (Labiatae)

Vernacular Name: Bantulasi (Bengali), Fig. 20

Botany: Aromatic perennial. Leaves elliptic lanceolate, acute, 2.4 to 5 cm long, serrate, pubescent. Flowers white, 6 in a whorl, in raceme. Calyx lobes 5, hairy within, upper broad. Corolla 5-6 mm long, lower lip equal to upper.

Flowering and Fruiting: July to December

Medicinal Importance: Decoction of leaves used to stop bleeding, to cutaneous disease, gastric disorder of children, hepatic affections. It is also used to treat common cold and cough. Juice applied on affected area in case of insects' bites, and used to treat nasal problems.

Distribution: Roadside, edge of the forest, village shrubberies.

Propagation: By immediate placement of seed/seedlings.

Sterilization: Surface sterilization by rectified spirit.

21. TULSHI

Scientific Name: *Ocimum sanctum* L.

Family: Lamiaceae

Vernacular Name: Tulasi (Bengali), Fig. 21

Botany: Erect aromatic annual. Leaves ovate to lanceolate, entire or serrate, 2.5-6 cm long, acute. Flowers purplish-white, in whorls of racemes. Calyx lobes 5, glabrous within, upper lobe broad. Pedicel longer than calyx. Corolla 2-lipped, 7-9 mm long.

Flowering and Fruiting: Throughout the year

Medicinal Importance: Used to treat catarrh, bronchitis, ringworms, cutaneous disease, gastric disorder of children, hepatic affections, juice with honey given to children to cure cold and cough, and constipation, with ginger given in cold fever, juice applied on affected area in case of insects bites, and taken as blood purifier, juice with common salt applied on ringworm, juice applied over body to remove unwanted spot. Seeds are used in case of disorder of genitor-urinary system, soaked in water for overnight and taken to cure complaints. Roots used to treat strings of wasp and bees, bites of worms and leeches (Anonymous, 2005).

Distribution: Planted in pots or in the gardens.

Propagation: By immediate placement of seed.

Sterilization: Seed sterilization by rectified spirit.

22. BHUI AMLA

Scientific Name: *Phyllanthus fraternus* Webster

Synonym: *Phyllanthus niruri* Hook. f. Non L.

Family: Euphorbiaceae

Vernacular Name: Bhui amla, Sada hazarmani (Bengali), Fig. 22

Botany: An annual herb frequently with branching stems. Leaves numerous, sub-sessile, oblong- elliptic to linear oblong, glabrous, obtuse, 6-9mm long. Flowers yellowish green, momoecious, axillary, males 1-3, with 6 glands; female solitary. Calyx lobes 6. Petals 0, Stamens 3, fused. Fruits small, smooth, capsular, seeds trigonous, pale brown, ribbed.

Flowering and Fruiting: July to October

Medicinal Importance: Whole plant is used as antipyretic, antiseptic, astringent, diuretic. Used in dropsy, diarrhoea, dysentery, dyspepsia, colic, gonorrhoea, menorrhagia, genitor-urinal problems, jaundice, bronchitis as well as in asthma. Decoction used to treat jaundice and liver problems.

Distribution: Waste places, in jungle of sal forest, shady places and hedges, village gardens.

Propagation: By seeds.

Sterilization: For seeds surface sterilization by rectified spirit.

23. SADACHITA

Scientific Name: *Plumbago zeylanica* L.

Family: Plumbaginaceae

Vernacular Name: Sadachita, Chitamul (Bengali), Fig. 23

Botany: Perennial under shrub with brilliant white flowers at the top. Leaves alternate, 10-12 cm long, ovate-elliptic, glabrous, petiole auricled at base, Flowers are in a dense spike, bracts with broad auricled base, viscous, calyx with many stalked glands, capsule long with pointed tips.

Flowering and Fruiting: September to December

Medicinal Importance: Root bark used to treat swelling due to enlargement of prostate gland. Leaves applied to swelling and elephantiasis. Paste of stem bark used to cure piles, decoction and black pepper along with common salt used as appetizer.

Distribution: In roadside shrubberies, waste places, occasionally at the villager's garden as weed.

Propagation: By immediate cuttings and placed them in sand for 15-22 days after placement as inclined one with proper watering.

Sterilization: Seed sterilization by rectified spirit.

24. MITHAPATA/CHINIPATA

Scientific Name: *Scoparia dulcis* L.

Family: Scrophulariaceae

Vernacular Name: Bandhonia, Mithapata (Bengali), Fig. 24

Botany: Erect much branched, glabrous annual herb. Stem angled branched. Leaves opposite, sometimes in whorls of three, oblanceolate to oblong to ovate, 1.5 to 3 cm long, serrate. Flowers white, small, 1-2 from each

axil, tetramerous. Calyx divided in to 4 segments, recurved. Corolla white with a very short tube, hairy on throat. Stamens 4. Fruits globose capsule. Seeds minute , pale brown.

Flowering and Fruiting: Round the year

Medicinal Importance: used to treat bladder stone, kidney complaints, toothache, mouth ulcers, and diabetes. Roots used in diarrhoea, dysentery, menorrhagia. Seed powder taken to treat kidney problems. Leaf poultice with ghee applied on fracture to relief pain and swelling.

Distribution: In sal forest (*Shorea robusta* Gaertn. f.), roadside shrubberies, waste places, gardens, open tract of plantation site, river bank, agricultural field, fallow land etc.

Propagation: By seeds.

Sterilization: For seeds rectified spirit.

25. NIMUKHA/ TEJOMALA

Scientific Name: *Stephania japonica* (Thunb.) Miers.

Synonym: *Stephania hernandifolia* Walp.

Family: Menispermaceae

Vernacular Name: Nimukha (Bengali), Tejomala (Santhalai), Fig. 25

Botany: Slender climbing herb with striate branches. Leaves peltate, 4-5 cm long, acute. Flowers unisexual. Sepals of male flowers 6-10, free, ovate, petals 3-5, obovate, fleshy, Anthers 6, connate. Female sepals 3-5 as in male. Carpels solitary, styles 3-6 partite. Fruits drupe like, glabrous. Seeds almost annular in the fruits of hanging type.

Flowering and Fruiting: July to November

Medicinal Importance: Roots used to treat bowel complaints, pain in the stomach, dyspepsia, diarrhoea, dropsy, cough, and prolapsus of uteri. Leaves used to bilious fever, birth control, and leucorrhoea. Roots and leaves used for piles, dysentery and cough.

Distribution: In bushes and in hedges of forest and margin of rivers.

Propagation: By seeds.

Sterilization: For seed rectified spirit treatment.

26. GHET KACHU

Scientific Name: *Typhonium trilobatum* (L.) Schott.

Family: Araceae

Vernacular Name: Bankachu/Ghetkachu (Bengali), Fig. 26

Botany: Small herb, tuber sub-globose. Leaves hastately deeply 3-partite, to 20 cm long, base cordate, lobes ovate. Spadix with female flowers at base, males above, appendix reddish. Neuter flowers white. Stamens 1-3.

Flowering and Fruiting: October to November

Medicinal Importance: Root used to treat venomous bite. Tubers and roots used as stimulant, used in haemorrhoids, windy colic, boils, eruption and used as an antidote to snake bite; paste applied as a poultice on scirrhus tumours.

Distribution: In sal (*Shorea robusta* Gaertn. f.) forest, shady places and hedges.

Propagation: By corm.

Sterilization: For corm rectified spirit after removal of roots.

27 EKANGI

Scientific Name: *Kaempferia galangal* L.

Family: Zingiberaceae

Vernacular Name: Chandramula/ Ekangi (Bengali), Fig. 27

Botany: Perennial aromatic herb with bulbous rhizome, sub-geophytic, roots cylindrical, leaves obovate-rotundate spreading horizontally, deep green, above glabrous, beneath pubescent, lamina wavy, 6-12 x 2.2 -8.5 cm as orbicular to obovate rotundate, petiole short. Flowers delicate, 6-12 in a small fascicle, opening successively, fragrant, white with purple spot in each side of the lip, persists only ca. 2 hours (6-8 a.m.), available at early morning.

Flowering: Last week of May to June

Medicinal Importance: Rhizome is important as it is widely used in ayurvedic system. Rhizome is used as fishing materials and marketed as 'Ekangi'. Rhizome is used as expectorant, diuretic, anti-inflammatory, anthelmintic and carminative.

Distribution: Planted in Garden, available in Susunia forest of Bankura, West Bengal.

Propagation: By Rhizome.

Sterilization: For corm rectified spirit after tap water wash.

28. DANTMARI/KUMARIKA

Scientific Name: *Smilax macrophylla* Willd.

Family: Smilacaceae

Vernacular Name: Ramdantun/Ramdatan/Kumarika (Bengali), Fig. 28

Botany: Trailing shrubs, woody, unarmed, leaves leathery, 7-13 x 4-12 cm, broadly ovate to elliptic, basal leaves lanceolate and upper purely ovate, base round, 3-5 nerved, leaf stalked, base with 2 projecting tendrils, used to climb in forest, stem with spines, perianth recurved, flowers condensed, greenish-grey, in condensed cyme.

Flowering and Fruiting: July to September.

Medicinal Importance: Root used to treat venereal disease, rheumatic swellings, urinary troubles and in dental carries.

Distribution: In sal (*Shorea robusta* Gaertn. f.) dominated forest, available after March and get leaves in May to June.

Propagation: By seeds or by roots.

Sterilization: For seeds surface sterilization by any surface sterilizer.

29. LAU

Scientific Name: *Lagenaria siceraria* (Molina) Standl.

Family: Cucurbitaceae

Vernacular Name: Bottle Gourd, Lou, Lau, Pani Lau (Bengali), Fig. 29

Botany: A large climber with white flowers, stem has tendrils to climb up, Leaves with long petiole, flowers two types male and female. Fruits varied types and pepo type fruits, seeds in a series in fruits.

Flowering and Fruiting: Round the year

Medicinal Importance: All parts of plants are edible. Pulp around seeds is used as sedative and laxative. A research study revealed that Lagenin (20kDa) isolated from seeds is reported to have anti-tumour, antiviral, anti-proliferative and anti HIV activity (Ahmed, 2011).

Distribution: In almost all gardeners in southwest Bengal.

Propagation: By seeds.

Sterilization: Not required, because seeds are available as treated seeds.

30. SANDAL, SONALI, AMLATAS, SONDAL (Bengali)

Scientific Name: *Cassia fistula* L.

Family: Caesalpinaceae

Vernacular Name: Sonali, Sandal, Bandar Lathi, Amlatas (Bengali), Fig. 30

Botany: medium sized deciduous tree attain height of about 15-20 m, leaflets, 7-20cm long and 4-9cm broad, flowers pendulous, racemes, 25-35 cm long, fruits legumes, 50-60cm long, seeds numerous.

Flowering and Fruiting: March-September.

Medicinal Importance: All parts of fruits in immature and in ripe one. Fruits pulp laxative used to treat different ailments and in constipation. Present research revealed that *C. fistula* is an important medicinal and traditional plant with diverse chemical including carbohydrates, linoleic, oleic and stearic acids with different pharmacological spectrum (Pawar *et al.* 2017).

Propagation: By seeds.

Sterilization: Not required, because seeds are available in wild.

IV. FIGURES

Medicinal Plants of Southwest Bengal, India (Fig. 1 to 30)



Fig. 1 *Achyranthes aspera* L.



Fig. 2 *Adhatoda zeylanica* Medic.



Fig. 3 *Ageratum conyzoides* L. (Right in Experimental garden)



Fig. 4 *Andrographis paniculata* (Burm. f.) Wall ex Nees (Left Vegetative stage, right reproductive stage)



Fig. 5 *Asparagus racemosus* Willd. at Left , right one seedlings in wild



Fig. 6 *Barleria prinitis* L. (Vegetative stage at the left and flowering stage at the right side)



Fig. 7 *Catharanthus roseus* (L.) G. Don. (White and Pink variety)



Fig. 8 *Centella asiatica* (L.) Urban.



Fig. 9 *Cynodon dactylon* (L.) Pers. (Left in wild and right in cultivated land)



Fig. 10 *Cyperus rotundus* L. (Agricultural land and in Waste place)



Fig. 11 *Desmodium gangeticum* DC. in experimental garden (left), Forest floor during monsoon



Fig. 12 *Eryngium foetidum* L. (In Garden, in pot)



Fig. 13 *Ayapana triplinervis* (M. Vahl.) R. King & H. Robinson



Fig. 14 *Euphorbia hirta* L. in Pot



Fig. 15 *Evolvulus nummularius* L.



Fig. 16 *Hemidesmus indicus* (L.) R. Br.



Fig 17. *Mecardonia procumbens* (Mill.) Swall .



Fig. 18 *Kalanchoe pinnata* (Lam.) Pers.



Fig. 19 *Mentha piperita* L. (In Garden and in Pot with flowers)



Fig. 20 *Ocimum americanum* L.



Fig. 21 *Ocimum sanctum* L.



Fig. 22 *Phyllanthus fraternus* Webster



Fig. 23 *Plumbago zeylanica* L.



Fig. 24 Mature *Scoparia dulcis* L.



Fig. 25 *Stephania japonica* (Thunb.) Miers. at Garden



Fig. 26 *Typhonium trilobatum* (L.) Schott. (Right with flowers in May, 2017)



Fig. 27 *Kampferia rotundifolia* L. (Flowering in May under pot culture)

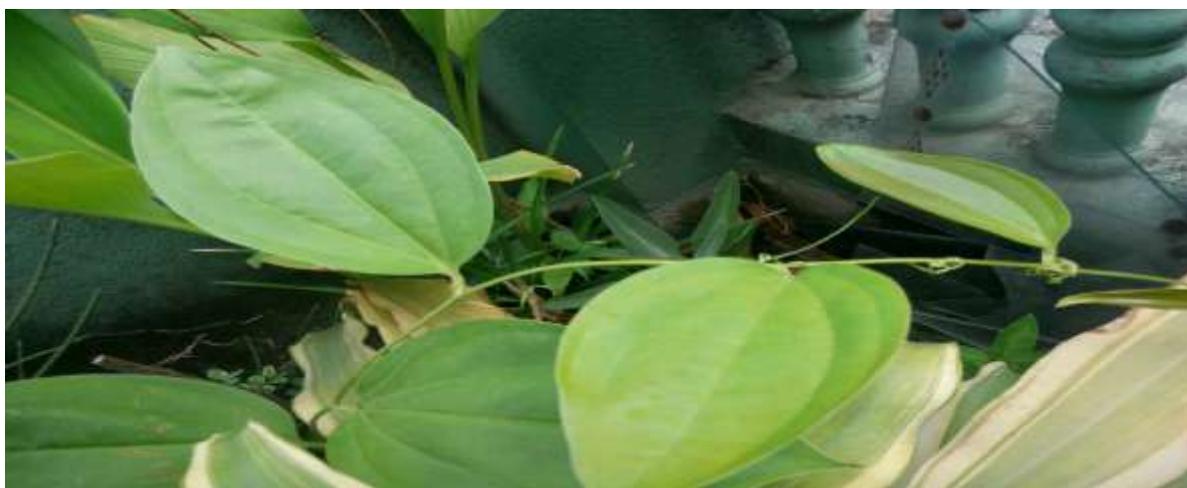


Fig. 28 *Smilax macrophylla* Willd.



Fig. 29 *Lagenaria siceraria* (Molina) Standl. (Organic product used as Vegetable drug)



Fig. 30 *Cassia fistula* L. (Flowering in May, 2017 in wild at Bhimpur, Midnapore)

V. CONCLUSION

All the plants presented here are medicinal as well as vegetable drug plants of the said area. These are used extensively by local people. The plants and plant parts available in market or weekly market (hat) in which local people use these to generate economy. The huge collection of species from natural site is therefore destroying vegetation too. The fate is global extinction or the loss of population which determining vulnerability of species. Among them, the only species has its great importance, is *Cyperus rotundus*. It needs cultivation. The demand is high because medicine men use this rhizome for drug formulation in ayurvedic system of medicine. It is used in other purpose like lowering the acidity and in appetite directly.

A wide range of Cyperaceous species are used as medicinal plants in Southwest Bengal, India, but among them *Cyperus* is used widely among the people in a wide range of lateritic districts of Southwest Bengal as medicinal plant. The key identification is very tough as this need a wide spectrum of floral as well as morphological study which has been used literally in many books and manuals but widely used such flora is FLORA MALESIANA (Ser. 1, Vol.7) by Kern (1972-1976). According to the opinion it is argued that, several genera possess a worldwide range, sometimes restricted to the tropics and sub-tropics, e.g. *Bulbostylis*, *Fuirena*, *Hypolytrum*, *Lipocarpha*, and *Mapania*, sometimes however distributed over the warm and temperate zones. Example, *Carex*, *Cladium*, *Cyperus*, *Eleocharis*, *Fimbristylis*, *Machaerina*, *Rhynchospora*, *Schoenus*, *Scirpus* and *Scleria*. So, better is to identify the habitats and fate of species locally which could be a boon to identify the extinction of species globally and after that strategy may be made for better understanding of those medicinal plant species.

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