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COMMON MEDICINAL HERBS OF LOW-LYING LANDS IN JHARGRAM DISTRICT, WEST BENGAL, INDIA

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ABSTRACT ■ Low-lying lands in and around forests, agricultural and waterlogged depressions, being highly productive, support a host of precious medicinal plants, among other plant resources. This article for the first time discusses the role of the indigenous knowledge system around the use of herbal resources of these low land environments of Jhargram district in West Bengal. The study records the use of 50 medicinal plants species under 48 genera distributed over 31 families which are used to treat various human ailments. It also makes a humble plea to highlight the health-friendly role of herbal resources in healthcare systems sustainably.

Key Words: *Indigenous knowledge, Jhargram district, Low-lying land, Medicinal herbs*

INTRODUCTION

India is a land rich in biodiversity, and more so for medicinal plant resources. From the dawn of civilization, human beings are dependent primarily on plants for food, shelter and healthcare (Dubey *et al*., 2004). The age-old traditional system of medicine, namely Ayurveda, Unani, Siddha and Homoeopathy etc. are based on herbal formulation. Interestingly, the preparation of a database of medicinal plants and their conservation and cultivation are now a priority issue of our National Agenda (WHO, 2009). Consequently, in recent years there is an upsurge of interest in research on medicinal plants in the form of research papers, books, edited books and awareness-building leaflets. To promote their activities, the Government of India has constituted National Medicinal Plant Boards at their state level. Several Indian states have already documented their medicinal plant resources with a mission for conservation, cultivation and utilization of this wealth. Demands for medicinal plants on the national and international market have shown rising trends since the last two decades (Martin, 2010).

The state of West Bengal is remarkably rich in medicinal plants owing to its diverse ecosystems ranging from sea-coast to the Himalayan ranges punctuated with terai forests, aquatic, riparian zones and lateritic Chotonagpur pleatu. Undivided Medinipur district (now Paschim Medinipur, Purba Medinipur and Jhargram districts) due to its various eco-zones – coastal environment,

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riparian and fertile agricultural ecosystems on one hand, and forested red lateritic zone particularly in the Jhargram district on the other hand support a cocktail of biodiversity including medicinal plants. The newly created Jhargram district (carved out from Paschim Medinipur district in 2017) with its forest-covered hillocks and undulating landmasses (locally known as *tillas*) consists of plenty "valley-like" depressed pockets in between them and agricultural lands that remain sufficiently water-saturated and nutrient-rich areas (due to accumulation of soils with runoff waters) throughout the year or at least seasonally, host a unique assemblage of medicinal plants, among others, typical of "ecotone" type.

In this context, this article attempts to make an inventory of herbaceous medicinal plants growing in these low-lying soils. Although there are some publications on medicinal plants of the undivided district, alone (Pal and Jain, 1989; Bhakat and Pandit, 2003, 2007; Bhakat and Sen, 2008, 2017, 2018; Bhakat, 2006, 2014; Chaudhury *et al*., 2017) or clubbed with adjoining Bankura and Purulia districts (Ghosh, 2003, 2013a, b; Pakrashi and Mukhopadhyay, 2004; Paria, 2005; Anonymous, 2010), so-far no available literature on medicinal plant resources of low-lying soil lands exists of Jhargram district. Therefore, this write-up seems to be the first report of its kind of study about these precious resources of low-lying areas of Jhargram district.

MATERIALS AND METHODS

STUDY AREA

Jhargram district in West Bengal is bordered by the districts of Purulia and Bankura on the north and Paschim Medinipur district in the east, the state of Odisha on the south, and Jharkhand state on the west (Fig. 1). Rivers like the Dulong, Kangsabati, Subarnarekha and Tarafeni flow through the district. It is lying between 21°52Ê-22°48Ê N and 86°34Ê-87°20Ê E and covers an area of 3037.64 km^2 and has a population of 1136548 as per 2011 census (Anonymous, 2011). Due to its unique location, a large portion of the district is predominantly covered with dry deciduous forests with naturally regenerating *Shorea robusta* plantations along with *Anogeissus latifolia*, *Butea monosperma*, *Madhuca longifolia* var. *latifolia*, *Schleichera oleosa*, *Terminalia alata*, *Terminalia arjuna*, etc. Since the area comes under the middle tribal zone of India, it supports a substantial (nearly 50%) population of different ethnic groups like *Bagdi*, *Kora*, *Lodha-Sabar*, *Munda*, *Santal*, etc. who reside near forest-fringe areas and depend largely on herbal medicines from the nearby forest and among other forest produces.

METHODOLOGY

During the season-wise surveys from 2018-2020, the whole district (east-west and north-south) is criss-crossed for collecting information about the uses of medicinal plants by ethnic groups and other non-tribal populations, particularly elder people. While surveying the moisture-saturated low-lying catchment areas of rivers, rivulets and seasonally waterlogged pockets of forests of the following eight (8) blocks were thoroughly travelled e.g. Binpur I, Binpur II, Gopiballavpur I, Gopiballavpur II, Jambani, Jhargram, Nayagram and Sankrail. Plant specimens were identified on the spot identification method. For unknown specimens, herbarium sheets were prepared and matched with Vidyasagar University Herbarium. Information about medicinal uses

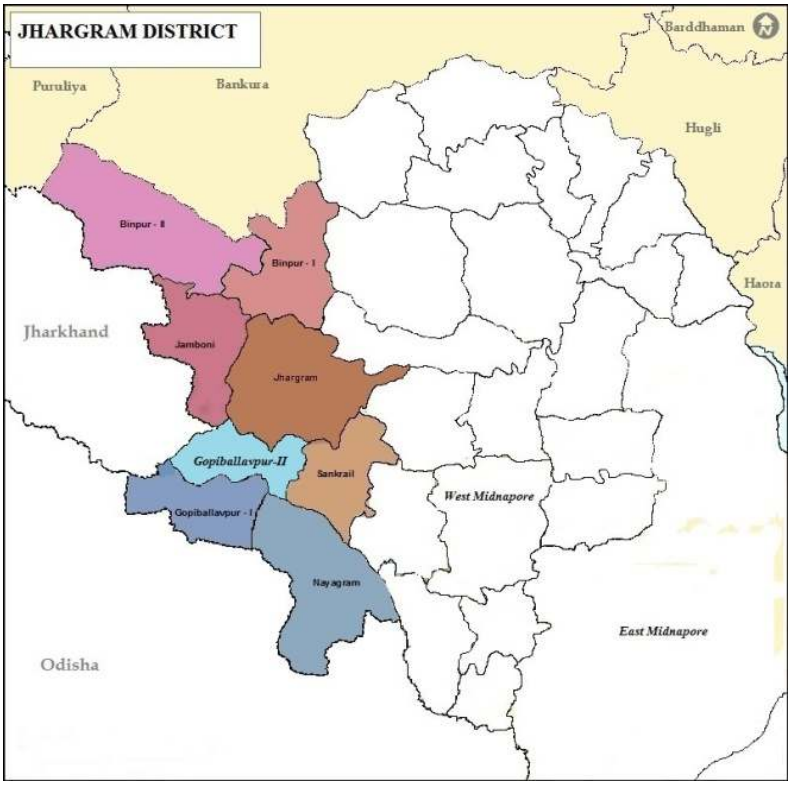

Fig. 1: Different Blocks of Jhargram District. (Inset: Jhargram District in West Bengal)

were also verified with standard literature on medicinal plants (Pakrashi and Mukhopadhyay, 2004; Paria, 2005; Bhakat and Sen, 2008, 2013, 2018; Anonymous, 2010; Jain, 2015; Kumar, 2017; Sen and Bhakat, 2018a, b; Sen, 2018 a, b). Finally, species were arranged alphabetically, providing accepted botanical names, a family within parenthesis, local names and the usable parts of the plants.

RESULTS AND DISCUSSION

The present inventory on medicinally important herbaceous plants of the low-lying areas revealed a total of 50 species [dicots 40 (80%) and monocots 10 (20%)] belonging to 46 genera [dicots 36 (78.26%) and monocots 10 (21.74%)] under 31 families [dicots 24 (77.42%) and monocots 7 (22.58%)] (Fig. 2). Habit-wise species are annuals and perennials.

The five well-represented families in species (e"3 species) quantity are Acanthaceae 4(8%), Asteraceae 4(8%), Plantaginaceae 4(8%), Amaranthaceae 3(6%) and Convolvulaceae 3(6%) (Fig. 3). Araceae, Boraginaceae, Commelinaceae, Cyperaceae, Fabaceae and Molluginaceae comprise 2(4%) species each. Another 20 families each carry only a single species (List 1). The two well-represented genera containing 2 species are *Hygrophila* and *Limnophila*. The rest 46 species belong to a single genus (List 1).

Barring a few (*Aeschynomene indica*, *Bacopa monnieri*, *Dentella repens* and *Glinus oppositifolius*), most of the medicinal plants are used to treat many diseases and in various ways. Some species are used as a

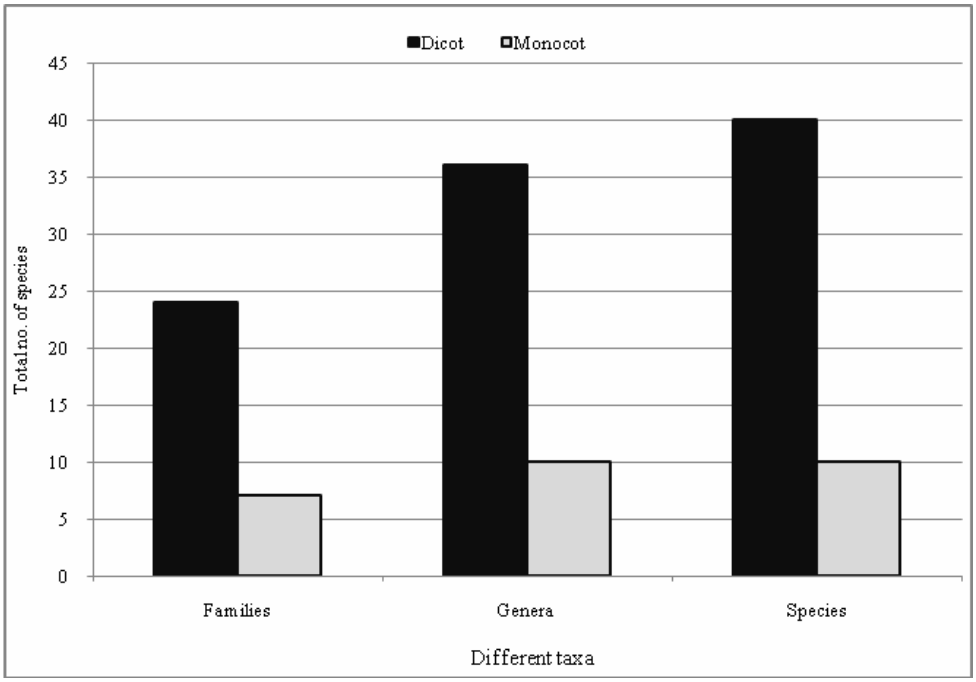

Fig. 2: Different angiosperm taxa.

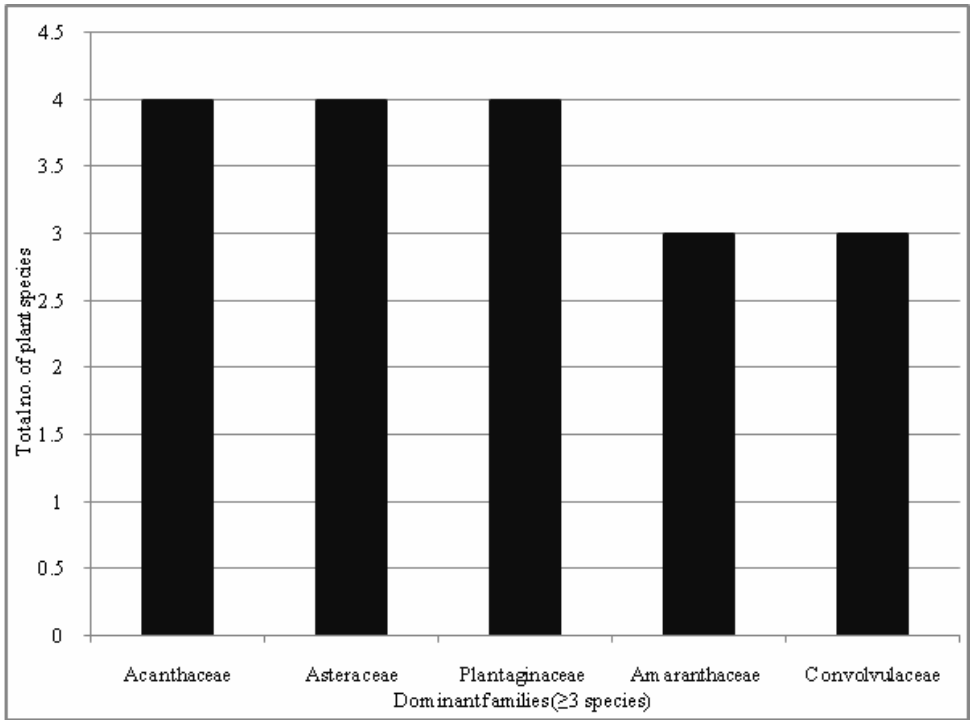

Fig. 3: Dominant families (≥ 3 species).

poultice when dry/fresh plant parts are crushed and applied externally to the affected region or taken internally to treat other maladies. In respiratory common-cold related and other chest-related problems, inhalation of vapour coming out of boiling water containing plant parts is very effective. In many cases, plant parts are taken directly as decoctions. Almost all plant parts-from roots to seeds/fruits are used as guided by elder peoples' age-old indigenous knowledge about the concerned plant or plant parts.

List 1: Reported medicinal herbs in low-lying areas of Jhargram district.

1. ***Aeschynomene indica* L.** (Fabaceae); *Kathsola*
   Use: The whole plant are used as spermicidal.
2. ***Ageratum conyzoides* L.** (Asteraceae); *Dochhunti*
   Use(s): Whole plant anti-inflammatory, antibacterial, antifungal and styptic.
3. ***Alocasia macrorrhizos* (L.) G.Don** (Araceae); *Mankachu*
   Use(s): Rootstock-mild laxative, diuretic; used in inflammations and diseases of abdomen and spleen. Leaf-astringent, styptic, antitumour. Root and leaf-rubefacient. Tubers-used as a vegetable after eliminating oxalate content.
4. ***Alpinia galanga* (L.) Willd.** (Zingiberaceae); *Kulanja*
   Use(s): Rhizome-carminative (in dyspepsia), stomachic, circulatory stimulant, diaphoretic, anti-inflammatory.
5. ***Alternanthera sessilis* (L.) R.Br. ex DC.** (Amaranthaceae); *Sanchey*
   Use (s): Whole plant used as febrifuge, galactagogue, cholagogue.
6. ***Amaranthus spinosus* L.** (Amaranthaceae); *Kanta notey*
   Use(s): Whole plant used as galactogenic, laxative, emollient, spasmolytic, diuretic; pollen extract used for asthma and allergic rhinitis. Root-used in menorrhoea.
7. ***Bacopa monnieri* (L.) Wettst.** (Plantaginaceae); *Brahmi*
   Use: Whole plant used as brain tonic.
8. ***Boerhavia diffusa* L.** (Nyctaginaceae); *Punarnava*
   Use(s): Whole plant used as diuretic, anti-inflammatory, antiarthritic, spasmolytic, antibacterial. Root-anticonvulsant, analgesic, expectorant, central nervous system depressant, laxative, diuretic and abortifacient.
9. ***Bonnaya ciliata* (Colsm.) Spreng.** (Linderniaceae); *Bhuinim*
   Use(s): Whole plant- juice given in chronic bronchitis cough and cold also taken for skin diseases.
10. ***Canscora alata* (Roth) Wall.** (Gentianaceae); *Daankuni*
    Use(s): Whole plant used as anticonvulsant, central nervous system depressant, anti-inflammatory and hepatoprotective.
11. ***Centella asiatica* (L.) Urb.** (Apiaceae); *Thankuni*
    Use(s): Whole plant used in chronic dysentery, adaptogen, *central nervous system* relaxant, peripheral vasodilator, sedative, antibiotic, detoxifier, blood purifier, laxative, diuretic, emmenagogue also used as a brain tonic for improving memory and for overcoming mental confusion, stress, fatigue, also used for obstinate skin diseases and leprosy.
12. ***Centipeda minima* (L.) A.Braun & Asch.** (Asteraceae); *Mecheta*
    Use(s): Whole plant used for the treatment of rhinitis, sinusitis, nasopharyngeal tumours and

obstructions, asthma and cold; also used in hemicrania.

13. ***Chrozophora plicata* (Vahl) A.Juss. ex Spreng.** (Euphorbiaceae); *Suryabrata*
Use(s): Leaf-depurative; seed-cathartic.
14. ***Coldenia procumbens* L.** (Boraginaceae); *Tripakshi*
Use(s): Whole plant is used for the treatment of inflammation, rheumatism and diabetes.
15. ***Colocasia esculenta* (L.) Schott** (Araceae); *Altikachu*
Use(s): Juice from petiole-styptic, rubefacient; juice of corm used in alopecia.
16. ***Commelina benghalensis* L.** (Commelinaceae); *Kanchira*
Use(s): Whole plant used as emollient, demulcent, laxative, diuretic and antileprotic.
17. ***Curculigo orchioides* Gaertn.** (Hypoxidaceae); *Talmuli*
Use(s): Root used as nervine, adaptogenic, sedative, anticonvulsive, androgenic, anti-inflammatory and diuretic; used in jaundice, urinary disorders, skin diseases and asthma.
18. ***Cyanotis tuberosa* (Roxb.) Schult. & Schult.f.** (Commelinaceae); *Nilani phul*
Use(s): Whole plant used in burns, boils and sores.
19. ***Cyperus rotundus* L.** (Cyperaceae); *Muthaghas*
Use(s): Rhizomatous tubers used as carminative, astringent, anti-inflammatory, antirheumatic, hepatoprotective, diuretic, antipyretic, analgesic, hypotensive, emmenagogue and nervine tonic.
20. ***Dentella repens* (L.) J.R.Forst. & G.Forst.** (Rubiaceae); *Bhuipat*
Use(s): Whole plant used as poultice to treat soars.
21. ***Drosera burmanni* Vahl** (Droseraceae); *Suryasisir*
Use(s): Resin from plant-used in bronchitis and whooping cough, plant-antisyphilitic. Bruised leaves mixed with salt applied for treating blisters.
22. ***Eclipta prostrata* (L.) L.** (Asteraceae); *Kesute*
Use(s): whole plant deobstruent, antihepatotoxic, anticatarrhal, febrifuge; used in hepatitis, spleen enlargements, chronic skin diseases; leaf-promotes hair growth; its extract in oil applied to before bedtime in insomnia; also used as an ingredient in shampoos.
23. ***Enydra fluctuans* Lour.** (Asteraceae); *Hinche*
Use(s): Leaves- used as a laxative; used to cure inflammations, leucoderma, bronchitis, biliousness and smallpox; useful in skin disease, nervous system, liver complaints, gonorrhoea and dyspepsia; the juice is taken in empty stomach as antidysenteric; decoction with black pepper cure diabetes.
24. ***Eriocaulon quinquangulare* L.** (Eriocaulaceae); *Jhuri mutha*
Use(s): Stem-used as an aphrodisiac, refrigerant; useful in burning sensation, blood related diseases, thirst and urinary complaints. Root- burnt near women after delivery- its smoke is considered as beneficial.
25. ***Evolvulus alsinoides* (L.) L.** (Convolvulaceae); *Shankhapushpi*
Use(s): Whole plant used as brain tonic, an aid in conception, astringent, antidysenteric. Leaf- antiasthmatic; used in nervine affections (epilepsy, insanity, spermatorrhoea), and duodenal ulcers, also for uterine affections. Flowers are used for uterine bleeding and internal haemorrhages; decoction of the herb

used as a blood purifier.

26. ***Glinus oppositifolius* (L.) Aug. DC.** (Molluginaceae); *Gima*
Use: Whole plant used as weak sedative.
27. ***Heliotropium indicum* L.** (Boraginaceae); *Hatisur*
Use(s): Whole plant- diuretic, astringent, emollient, vulnerary; used as a local application for the remedy of ulcers, wounds, sores, gum boils and skin affections; decoction of leaves used in urticaria and fevers; that of root in coughs. Flowers-emmenagogue in small doses, abortifacient in large doses. Masticated seeds-stomachic.
28. ***Hydrocotyle sibthorpioides* Lam.** (Araliaceae); *Loach*
Use(s): Whole plant used for indigestion, dysentery and nervousness.
29. ***Hydrolea zeylanica* (L.) Vahl** (Hydroleaceae); *Kaschara*
Use(s): Leaf paste used for callous ulcers; whole plant antiprotozoal.
30. ***Hygrophila polysperma* (Roxb.) T.Anderson** (Acanthaceae); *Chhoto Kulekhara*
Use(s): Leaves, roots and seeds-diuretic; used for diseases of the urinogenital tract, spermatorrhoea; seeds promote sexual vigour, arrest abortion and cure diseases due to vitiated blood; also used for arthritis and oedema.
31. ***Hygrophila triflora* (Nees) Fosberg & Sachet (Acanthaceae); *Kulekhara***
Use(s): Leaves and whole plant diuretic, used for catarrh of the urinary tract, for dropsy when accompanied by hepatic obstruction and in haematological problems.
32. ***Ipomoea aquatica* Forssk.** (Convolvulaceae); *Kalmi*
Use(s): Young twigs and leaves used as emetic and purgative; used as an antidote to arsenical or opium poisoning; plant juice is used for liver complaints; buds for ringworm.
33. ***Limnophila indica* (L.) Druce** (Plantaginaceae); *Karpur*
Use(s): whole plant- carminative, antiseptic; leaf-an infusion given in dyspepsia and dysentery; used in elephantiasis.
34. ***Limnophila sessiliflora* (Vahl) Blume** (Plantaginaceae); *Targanda*
Use(s): Whole plant used as galactagogue, aperients, antiseptic; juice is given in fever and for nursing mothers when milk is sour.
35. ***Ludwigia perennis* L.** (Onagraceae); *Keshardam*
Use(s): Whole plant used as cooling, diuretic, astringent, mild laxative; used in catarrhal affections of children; applied externally for burns and scalds. The pulp of the plant, steeped in buttermilk, used for dysentery. Root-febrifuge.
36. ***Melochia corchorifolia* L.** (Malvaceae); *Tikiokra*
Use(s): Leaf and root-antidysenteric. Leaf-applied as a poultice for swellings of abdomen and sores.
37. ***Phyla nodiflora* (L.) Greene** (Verbenaceae); *Bhuiokra*
Use(s): Whole plant used as cooling, febrifuge, diuretic. Poultice is used as a maturant for boils. Leaves-an infusion is given to women after delivery.
38. ***Phyllanthus amarus* Schumach. & Thonn.** (Phyllanthaceae); *Bhuiamla*
Use(s): Whole plant-diuretic, astringent, anti-inflammatory, styptic; used as a single drug in the treatment of jaundice; also for remedy of dyspepsia, indigestion, chronic dysentery, urinary tract diseases, diabetes, skin eruptions.

39. ***Polygonum plebeium*** **R.Br.** (Polygonaceae); *Chimtishak, Chikunishak*
Use(s): Whole plant-galactogenic, antidiarrhoeal. Powdered herb is given in pneumonia.
40. ***Portulaca quadrifida*** **L.** (Portulacaceae); *Chhotonunia*
Use(s): Whole plant- used in asthma, cough, urinary discharges, inflammations and ulcers. A poultice of the herb applied to haemorrhoids and erysipelas.
41. ***Pouzolzia zeylanica*** **(L.) Benn.** (Urticaceae); *Chakma*
Use(s): Decoction of leaves given in fevers; applied externally to swollen joints, also as a paste for the remedy headache.
42. ***Pupalia lappacea*** **(L.) Juss.** (Amaranthaceae); *Nagdamani*
Use(s): Whole plant used as astringent, antibilious; laxative in large doses. Flowers and seeds-diuretic; given for urinary discharges.
43. ***Rhynchospora colorata*** **(L.) H.Pfeiff.** (Cyperaceae); *Swetmutha*
Use(s): Essential oil of rhizomes and seeds- hypotensive, anti-inflammatory, central nervous system stimulant, antimicrobial. Rhizome-stomachic, cordial, antidiarrhoeal and diuretic.
44. ***Ruellia suffruticosa*** **Roxb.** (Acanthaceae); *Indurkani*
Use(s): Whole plant- used in renal affections, gonorrhoea, syphilis and other venereal diseases.
45. ***Scoparia dulcis*** **L.** (Plantaginaceae); *Mithapata*
Use(s): Whole plant decoction is used for gravel and other renal affections; Leaves-infusion is used in fever, cough and bronchitis. Root-febrifuge. Stem and leaves are used in anemia, albuminuria, ketonuria and other complications associated with diabetes mellitus.
46. ***Solanum americanum*** **Mill.** (Solanaceae); *Kakmachi*
Use(s): Plant-anti-inflammatory, antispasmodic, sedative, diuretic, laxative, antiseptic; the fresh extract used for inflammatory swellings, enlargement of liver and spleen and in cirrhosis of the liver. Fruits-antidiarrhoeal, antipyretic. Fruits and flowers are prescribed in cough and cold. Leaves-applied hot to swollen testicles; leaf paste used as poultice to gout, rheumatic swellings and skin diseases.
47. ***Strobilanthes hirta*** **(Vahl) Blume** (Acanthaceae); *Mushakani*
Use(s): Whole plant- juice is used to cure dysentery, use as antihelmintic. Paste of fruits used to treat scabies.
48. ***Trigastrotheca pentaphylla*** **(L.) Thulin** (Molluginaceae); *Khet papra*
Use(s): Whole plant- stomachic, aperient, febrifuge, antiseptic, blood purifier, emmenagogue. Root-used in rheumatism and gout. Flowers and shoots-diaphoretic, given in fevers. An infusion of the plant given to promote lochial discharge.
49. ***Xenostegia tridentata*** **(L.) D.F.Austin & Staples** (Convolvulaceae); *Sirka*
Use(s): Whole plant- laxative, astringent, anti-inflammatory; used in piles, swellings, rheumatic affections, stiffness of the joints, hemiplegic and urinary affections.
50. ***Zornia gibbosa*** **Span.** (Fabaceae); *Nelam*
Use(s): Whole plant used for the treatment of dysentery. Root-given to induce sleep.

CONCLUSION

Low-lying areas including waterlogged bodies in and around forests, rivers and agricultural fields are productive and highly valued environments in terms of ecology, economy and health if their resources particularly medicinal plants are tapped judiciously for human welfare. They can boost the local peoples' economy when systematic collections, marketing of disease-treating species are organized through cottage industries. The knowledge about medicinal plants thus gained can develop new strategies for the wise use and sustainable management of bioresources. To achieve this goal, scientists, researchers, the local public, NGOs and media persons have a role to organize awareness-building programmes to disseminate the value and safe use of these health-friendly herbal resources.

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