

Studies of bio-diversity of medicinal plants and their prospects and problems in Tripura

SUKHEN CHANDRA DAS AND A. K. DEB

ABSTRACT

Our state is endowed with very rich flora and fauna and rich biodiversity, which is under increasing threat from biotic and abiotic factors. The agroclimatic conditions of Tripura favour the cultivation of diverse medicinal plants and is considered to be the hot-spot of medicinal plants and has in abundance, diverse range of herbs, shrubs, trees and vines that have important medicinal value whose healing properties are known to the local healers and practitioner. Tripura being one of richest centres of biodiversity, more than 270 species medicinal plants have been identified for their medicinal uses, which make Tripura a unique position in traditional systems of medicine. The indiscriminate collection of medicinal plants from nature led to depletion and extinction in many cases making them as rare endangered and threatened species. The threats to biodiversity conservation is due to deforestation, high population growth, urbanization, shifting cultivation, grazing, illegal extraction of medicinal plants, forest fires etc. This paper emphasizes the diversity and potentiality of medicinal plants as a medicinal value and the need for the documentation and their utilization for the greater benefits of mankind. Therefore, adequate endeavors are needed for conservation of such invaluable biodiversity and for their sustainable use.

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Key words : Biodiversity, Medicinal plants, Conservation, Tripura

INTRODUCTION

Tripura have a large number of valuable naturally growing medicinal plants that are predominantly shared by rural poor and tribals communities. The agro-climatic conditions of Tripura favour the cultivation of different medicinal plants and the state is considered to be the hot-spot of medicinal plants. State has in abundance, a diverse range of herbs, shrubs, trees and vines that have significant medicinal value whose healing properties are known to the local healers and traditional doctors. Rural people suffering from common ailments like cold and cough, diarrhea, bronchitis, routine skin and eye irritations,

veterinary healers etc. Tripura being one of richest centre of biodiversity, more than 270 species of medicinal plants have been identified for their medicinal value (Das *et al.*, 2009; Das *et al.*, 2010). Out of 270 medicinal plants 255 medicinal plants have been listed in Table 1. In Tripura, medicinal plants are mostly found in hilly parts of Tripura and also found in homestead garden, road side, fallow land, waste land, forest land, agricultural fields and horticulture orchards without desired care and management. The demand of the medicinal plants are increasing day by day even in the home markets due to side effects of several allopathic drugs and development of resistance to currently used drugs for infectious diseases have led to increased emphasis on the use of plant materials as a source of medicines for a wide variety of human ailments. The parts used are seed, root, leaf, bark, fruit, flower, flower buds, stem, rhizome, bulb, tuber, wood or even whole plant. The major health problems among the peoples inhabiting interior areas of Tripura are malnutrition and the common diseases are diarrhea, malaria, gastroenteritis, leprosy, tuberculosis, eye diseases and various kinds of skin diseases. Ulcerous,

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wound, perforation of stomach and colic pains are commonly found among the tribals who are habituated of excessive country liquor, children often suffer from protein and vitamin deficiencies. Use of medicinal plants by the tribals for common health problems revealed that maximum number of plants, either alone or in combination were used against eye diseases, diarrhea, dysentery, loss of hair, bone fracture and female diseases etc.

MATERIALS AND METHODS

The state of Tripura with an area of 10,491 sq. km and four districts (North, South, Dhalai and West district) of Tripura. It lies between 22° 56' N- 24° 32' N latitude and 90° 09' E-92° 20' E longitude. Intensive survey work was conducted in all the districts (Fig.1) namely, North, South, Dhalai and West district along with the forests area. Efforts have been made to collect the medicinal plants which were in flowering and fruiting conditions and were identified with the help of local people. During the course of survey, first hand information on the medicinal uses of the plants was gathered from local people and practitioner. The uses of plants particularly for medicinal use were confirmed by many cross checking as possible in different localities. Under the above circumstances the survey and study work has been conducted during year 2008-2010 for recording scientific name, common name, family and part used for medicinal values.



Collection of information: The information on medicinal uses of plants was obtained through direct interviews with traditional healers. The data regarding names of plants with local name, parts used and their method of uses for various remedies were also noted down.

Identification: The plant materials were identified with the help of local tribals. The identification of plant materials was confirmed with local practitioner and labelled individually.

RESULTS AND DISCUSSION

In the present study diversity of medicinal plant species with scientific name, common name, family, part used for medicinal values were recorded which are being potentially exploited by the peoples of Tripura in curing different human- health related problems as shown in Table 1. The different families of medicinal plants include Acanthaceae, Rutaceae, Moraceae, Asclepiadaceae, Euphorbiaceae, Rutaceae, Verbenaceae, Zingiberaceae, Combretaceae, Salanaceae, Lamiaceae and other families. Among the different medicinal plant species recorded are trees, shrubs, herbs and climbers as shown in the Table 1. For the preparation of the traditional medicine, these tribal and local practitioner used different parts of the plant species in different concentration of gum, root, fruit, seed, latex, root, bark, whole plant and flower etc.

In the present investigation diversity of medicinal plant species have been recorded, which are used by the different local peoples and practitioner of Tripura for different ailments. Different ailments/diseases are being treated by these plant species (Table 1). The wide range of remedies like asthma, body pains, bone fractures, cold, cough, cuts and wounds, dysentery, diarrhoea, eczema, gastric ulcers, night blindness, skin troubles, stomach ache, syphilis and other problems, these medicinal plants have been used singly as well as combination of two three herbs. In this study total two hundred and fifty five beneficial medicinal plants have been recorded with scientific name, common name, family and part used for medicine.

Problems for development of medicinal plants:

- Indiscriminate collection of wild medicinal plants and burning of forest areas cause loss of valuable wild medicinal plants .
- Lack of systemic collection and conservation of wild medicinal plants.
- Lack of knowledge for identification of valuable wild medicinal plants.
- Inadequate supply of quality planting materials of

Table 1 : Diversity of medicinal plants in Tripura and parts used for medicinal value

Sr..No.	Botanical name and local name	Family	Parts used as medicin
1.	<i>Abroma angusta</i> (Olat Kambal)	Sterculiaceae	Root and bark
2.	<i>Abrus precatorius</i> (Gunchi/ Shon Kainch)	Fabaceae	Roots, seeds,leaves
3.	<i>Abutilon indicum</i> (Country mallow)	Malvaceae	Barks, seeds, roots
4.	<i>Acacia caesia</i> (Aila)	Mimosaceae	Bark and flowers
5.	<i>Abrus precatories</i> (Sonkaich)	Fabaceae	Root, seeds, leaves
6.	<i>Achyranthus aspera</i> (Apang)	Amaranthaceae	Whole plant,root
7.	<i>Acorus calamus</i> (Boch)	Araceae	Rhizome
8.	<i>Adatoda zeylanica</i> (Basak)	Acanthaceae	Leaves, roots
9.	<i>Adenantha pavonina</i> (Rakthakanchan)	Fabaceae	Bark, seeds ,wood
10.	<i>Aegle marmelos</i> (Bael)	Rutaceae	Root, bark, fruit
11.	<i>Ageratum conizoides</i> (Uchunti)	Asteraceae	Whole herbs
12.	<i>Albizia lebbek</i> (Siris tree)		Bark, flower, seeds
13.	<i>Allamanda cathartica</i> (Harkakra)	Apocynaceae	Leaves and bark
14.	<i>Alocasia indica</i> (Mankach)	Araceae	Root and tubers
15.	<i>Aloe barbadensis</i> (Ghritakumari)	Liliaceae	Leaves
16.	<i>Alpinia calcarata</i> (Kalanja)	Zingiberaceae	Rhizome
17.	<i>Alpinia galangal</i> (Greater galangal,mahabali bach)	Zingiberaceae	Rhizome
18.	<i>Alstonia scholaris</i> (Chatim)	Apocynaceae	Bark
19.	<i>Amaranthus spinosus</i> (knata note)	Amaranthaceae	Leaves, root, seeds
20.	<i>Amorphophallus</i> (Ool)	Araceae	Tuber
21.	<i>Anacardium occidentale</i> (Kaju badam)	Anacardiaceae	Bark, root, kernal
22.	<i>Ananas comosus</i> (Anaras)	Bromeliaceae	Leaves, fruit
23.	<i>Andrographis paniculata</i> (Kalomegh)	Acanthaceae	Whole plant
24.	<i>Annona reticulate</i> (Ramphal)	Annonaceae	Leaf, fruits, seeds, bark
25.	<i>Annona squamosa</i> (Seeta phala/ Swarupa)	Annonaceae	Stem, fruit and root
26.	<i>Anthocephalus cadamba</i> (Kadam)	Rubiaceae	Bark
27.	<i>Argemone mexicana</i> (Shial knata/mexican poppy)	Papaveraceae	Whole plant
28.	<i>Asteracnatha longifolia</i> (kule khanra)	Acanthaceae	Leaves, root
29.	<i>Asparagus racemosus</i> (Shatamuli)	Liliaceae	Tuber
30.	<i>Azadiracta indica</i> (Neem)	Meliaceae	Bark, fruit, leaves
31.	<i>Aquilaria agallocha</i> (Agar)	Thymeleaceae	Heart wood and oil
32.	<i>Artocarpus chaplasha</i> (Chamal)	Moraceae	Bark, leaves, fruits
33.	<i>Artocarpus lakoocha</i> (Dhaewa)	Moraceae	Fruits and seeds
34.	<i>Averrhoa carambola</i> (Kamranga)	Oxalidaceae	Fruit
35.	<i>Basella alba</i> (Puisag)	Basellaceae	Leaves, stem, root
36.	<i>Bacopa monnieri</i> (Brahmi)	Scrophulariaceae	Whole plant
37.	<i>Bauhinia racemosa</i> (Shweta kanchan)	Fabaceae	Bark, seeds, wood
38.	<i>Bauhinia variegata</i> (Rakta kanchan)	Fabaceae	Bark and flower
39.	<i>Bixa orellana</i> (Annatto/ Lipstick tree)	Rangumaale	Seeds , leaf, flower
40.	<i>Blumea lacera</i> (Kurkur Shuka)	Compositae	leaves
41.	<i>Borassus flabellifer</i> (Tal)	Araceae/ Palmae	Root and fruit
42.	<i>Brayphlium calycinum</i> (Pathar Kuchi)	Crassulceae	Leaves

Table 1 : Contd.....

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43.	<i>Boerhaavia diffusa</i> (Punarnava)	Nyctaginaceae	Leaves
44.	<i>Bombax ceiba</i> (Semul)	Bombaceae	Root, flower, fruit, latex.
45.	<i>Butea monosperma</i> (Palash)	Fabaceae	Bark, flowers, seed gum.
46.	<i>Cajanus cajan</i> (Arhar)	Fabaceae	Leaf and seed
47.	<i>Cardiospermum helicacabum</i> (Kapal futki/Sibjhul)	Sapindaceae	Leaf and root
48.	<i>Careya arborea</i> (Kumbhira)	Lecythidaceae	Stem, bark and root
49.	<i>Carica papaya</i> (Papaya)	Caricaceae	Fruit and seed
50.	<i>Calotropis gigantea</i> (Akanda)	Asclepiadaceae	Root, bark and leaf
51.	<i>Calotropis procera</i> (Akanda)	Asclepiadaceae	Leaves, roots and bark
52.	<i>Cantharanthus roseus</i> (Nayantara)	Apocynaceae	Root, stem, leaf
53.	<i>Carissa carandas</i> (Benbal current / karamcha)	Elaeocarpaceae	Roots, leaves fruits
54.	<i>Cascabela thevetia</i> (Yellow olender)	Apocynaceae	Stem
55.	<i>Cassia alata</i> (Dad mardan)	Caesalpiniaceae	Leaf, seed, bark
56.	<i>Cassia fistula</i> (Kakke gida/ Sonal/ Bandar lati)	Caesalpiniaceae	Root, bark, flower, fruit.
57.	<i>Cassia Sophera</i> (Kalkasunda/ Chotto eski)	Fabaceae	Seeds, leaves
58.	<i>Cassia occidentalis</i> (Haittenga/ Eski)	Caesalpiniaceae	Whole plant
59.	<i>Cassia tora</i> (Chakunda goeski / Chavuka)	Caesalpiniaceae	Leaves, seeds, pods
60.	<i>Ceiba pentandra</i> (Cotton)	Bombacaceae	Root,bark,leaf, flower, seed
61.	<i>Centalla asiatic</i> (Thankuni)	Umbellifercae	Whole plant
62.	<i>Chrysanthemum cinerariifolium</i> (Pyrethrins)	Asteraceae	Flower, roots
63.	<i>Cinnamum tamala</i> (Tajpata)	Lauraceae	Leaf
64.	<i>Cinnamomum zeylanicum</i> (Dalchini)	Lauraceae	Bark, leaves and oil
65.	<i>Cissus quadrangularis</i> (Harvanga)	Vitaceae	Stem
66.	<i>Cleome viscosa</i> (Wild mustard /Hurhura)	Capparaceae	Leaf and seed
67.	<i>Clerodendron fragrens</i> (Gandharaj)	Verbenaceae	Roots
68.	<i>Clerodendron inerme</i> (Smooth volkameria)	Verbenaceae	Roots
69.	<i>Clerodendrum viscosum</i> (Byte phul)	Verbenaceae	Root and leaf
70.	<i>Clitoria ternatea</i> (Aparajitha)	Fabaceae	Root, leaf, flower
71.	<i>Coccinia grandis</i> (Telakucha/ Kandhoori)	Cucurbitaceae	Whole plant
72.	<i>Coleus aromaticus</i> (Patherchur)	Lamiaceae	Whole plant
73.	<i>Colocasia esculanta</i> (Kochu)	Araceae	Rhizome, leaf
74.	<i>Commelia bengalensis</i> (Kanshira)	Commelinaceae	Whole plant
75.	<i>Commelia paludosa</i> (Kanshira)	Commelinaceae	Root, leaf
76.	<i>Costus speciosus</i> (Keo/ Kaew)	Zingiberaceae	Rhizome
77.	<i>Couroupita guianensis</i> (Anathasajja)	Lecythruidaceae	Fruit pulp, bark, flowers.
78.	<i>Crataeva nurvala</i> (Barun)	Capparidaceae	Bark, leaf, root, fruit
79.	<i>Crotalaria retusa</i>	Fabaceae	Whole plant
80.	<i>Crinum asiaticum</i> (Spider lilly/Nagdam)	Amaryllidaceae	Leaf and bulb
81.	<i>Crinum latifolium</i> (Wild onion)	Liliaceae	Underground bulb
82.	<i>Croton bonplandianum</i> (Ban tulsi)	Euphorbiaceae	Leaves
83.	<i>Crescentia cujete</i> (Calabash tree)	Bignoniaceae	Fruit, leaf, wood
84.	<i>Curculigo orchioides</i> (Chotto Tal muli)	Amaryllidaceae	Root
85.	<i>Curcuma aromatica</i> (Wild turmeric/ Jangli haldi)	Zingiberaceae	Rhizome
86.	<i>Curcuma longa</i> (Halud)	Zingiberaceae	Rhizome

Table 1 : Contd....

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87.	<i>Cynodon dactylon</i> (Durba)	Poaceae	Leaves
88.	<i>Cuseuta reflexa</i> (Swarna lata)	Cuscutaceae	Whole plant
89.	<i>Cymbopogon nardus</i> (L.) Rendle (Citronella)	Gramineae	Leaves
90.	<i>Cyperaceae esculentus</i> (Tiger nut/ Chufa)	Cyperaceae	Rhizome or root tuber
91.	<i>Cyperus rotundus</i> (Mutha/ Nut grass/Coco grass)	Cyperaceae	Rhizome or root tuber
92.	<i>Datura metel</i> (Dhutura-white flower)	Solanaceae	Seeds, whole plant
93.	<i>Datura stramonium</i> (Dhutura/ Indian thorn apple)	Solanaceae	Leaf, fruits
94.	<i>Desmodium gyrans</i> (Indian telegraphic plant)	Fabaceae	Whole plant
95.	<i>Desmodium trifolium</i> (Kudaliya lata)	Fabaceae	Whole plant
96.	<i>Dillenia indica</i> (Chalta/ Elephant apple)	Dilleniaceae	Fruit, bark, leaf
97.	<i>Dillenia pentagyna</i> (Hargaza)	Dilleniaceae	Fruit, bark, leaf
98.	<i>Dioscorea alata</i> (Chupri alu/ khamalu/ Yam)	Dioscoreaceae	Tubers
99.	<i>Dioscorea bulbifera</i> (Ban alu/ gaicha alu)	Dioscoreaceae	Tubers
100.	<i>Dioscorea floribunda</i> (Oushodhi kham Alu)	Dioscoreaceae	Tubers
101.	<i>Dioscorea esculenta</i> (Suthnialu)	Dioscoreaceae	Tubers
102.	<i>Dioscorea pentaphylla</i> (Kukur alu)	Dioscoreaceae	Tubers
103.	<i>Dipterocarpus turbinatus</i> (Garjan)	Dipterocarpaceae	Barks
104.	<i>Drynaria quercifolia</i> (Garur/ Gundia)	Polypodiaceae	Rhizome
105.	<i>Eclipta prostrates</i> (Keshuth)	Asteraceae	Whole plant
106.	<i>Eichhornia crassipes</i> (Water hyacinth)	Pontederiaceae	Whole plant
107.	<i>Elaeocarpus ganitrus</i> (Rudraksha)	Elaeocarpaceae	Fruit
108.	<i>Elaeocarpus floribundes</i> (Jalpai)	Eleocarpaceae	Bark and leaf
109.	<i>Emblica officinalis</i> (Amlaki)	Euphorbiaceae	Fruis, roots and bark
110.	<i>Eleutherine subaphylla</i> (Gagner)	Iridaceae	Bulb
111.	<i>Emilia sonchifolia</i> (Sudhimudhi)	Asteraceae	Whole plant
112.	<i>Enhydra fluctuans</i> (Helencha)	Asteraceae	Whole plant
113.	<i>Eryngium foetidum</i> (Bilaiti dhania)	Apiaceae	Whole plant
114.	<i>Euphorbia hirta</i> (Dudhi)	Euphorbiaceae	Whole plant
115.	<i>Euphorbia nerifolia</i> (Manasa)	Euphorbiaceae	Latex, root, and fruit
116.	<i>Euphorbia thymifolia</i> (Choti dudhiya)	Euphorbiaceae	Latex, root, and fruit
117.	<i>Euryale ferox</i> (Paniphall)	Nymphaeaceae	Seed
118.	<i>Feronia limonia</i> (Kaith bel, Wood apple)	Rutaceae	Leaf, fruits
119.	<i>Flcus bengalensis</i> (Bat)	Moreceae	Bark, bud, flower, fruit
120.	<i>Flcus benjamina</i> (Bat)	Moreceae	Bark, bud, flower, fruit
121.	<i>Flcus carica</i> (Anjir)	Moreceae	Fruit and latex
122.	<i>Flcus hispida</i> (Creeping fig)	Moreceae	Bark, leaves, fruits
123.	<i>Flcus racemosa</i> (Country fig, Cluster fig)	Moreceae	Bark, bud, flower, fruit
124.	<i>Flcus religiosa</i> (Aswattha/ Pipal)	Moreceae	Bark, root, leaves, fruits, latex
125.	<i>Flcus glomerata</i> (Joyjadamur)	Moreceae	Bark
126.	<i>Gardenia jasminoides</i> (Gandharaj)	Rubiaceae	Leaf and fruits
127.	<i>Gmelina arborea</i> (Gamar)	Verbenaceae	Root, leaf and fruit
122.	<i>Flcus hispida</i> (Creeping fig)	Moreceae	Bark, leaves, fruits
123.	<i>Flcus racemosa</i> (Country fig, Cluster fig)	Moreceae	Bark, bud, flower, fruit
124.	<i>Flcus religiosa</i> (Aswattha/ Pipal)	Moreceae	Bark, root, leaves, fruits, latex

Table 1 : Contd....

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125.	<i>Flcus glomerata</i> (Joyjadamur)	Moreceae	Bark
126.	<i>Gardenia jasminoides</i> (Gandharaj)	Rubiaceae	Leaf and fruits
127.	<i>Gmelina arborea</i> (Gamar)	Verbenaceae	Root, leaf and fruit
128.	<i>Garcinia pendulat</i> (Baikal, Amelvet)	Gutiferae	Fruits, seeds
129.	<i>Hedychium coronarium</i> (Dulal champa)	Zingiberaceae	Flowers and rhizomes
130.	<i>Heliotrapium indcum</i> (Hatisur)	Boraginaceae	Whole plants
131.	<i>Hemidesmus indicus</i> (Anatamul)	Peripocaceae	Root, leaf and stem
132.	<i>Hibiscus rosa-sinensis</i> (Jaba)	Malvaceae	Roots, leaf and flower
133.	<i>Hibiscus sabdariffa</i> (Mastha/ Roselle)	Malvaceae	Leaf, calyx, seeds
134.	<i>Holarrhena antidysenterica</i> (Kurchi)	Apocynaceae	Bark, seed
135.	<i>Homalonema aromatica</i> (Sugandhamantri)	Araceae	Rhizome
136.	<i>Hydnocarpus kurzii</i> (Chalmoogra)	Flacourtiaceae	Fruit and oil
137.	<i>Hygrophila auriculata</i> (Kulekhara)	Acanthaceae	Roots, leaf and seeds
138.	<i>Hyptis suaveolens</i> (Tokma/ Bilati tulsi)	Lamiaceae	Leaf, flowers, seeds
139.	<i>Jatropha curcas</i> (Shada Keran)	Euphorbiaceae	Stem, latex
140.	<i>Jatropha gossypifolia</i> (Lal Keran)	Euphorbiaceae	Seeds, latex
141.	<i>Justicia gendarussa</i> (Jagatmadan)	Acanthaceae	Roots, leaves
142.	<i>Kaempferia galanga</i> (Ekangi)	Zingiberaceae	Rhizome
143.	<i>Kyllinga brevifolia</i> (Mutha)	Cyperaceae	Whole plant
144.	<i>Lagerstroemia speciosa</i> (Jarool)	Lythraceae	Bark, leaves, root
145.	<i>Lannea coromandelica</i> (Badi)	Anacardiaceae	Bark, leaves
146.	<i>Lawsonia inermis</i> (Mehendhi)	Lythraceae	Leaves, flowers, seeds
147.	<i>Leucas aspera</i> (Danda Kalash)	Lamiaceae	Whole plant
148.	<i>Litsea glutinosa</i> (Kukur chitta)	Lauraceae	Bark, leaves, buds
149.	<i>Lygodium scandens</i> (Fern)	Schizaeaceae	Whole plant
150.	<i>Mallotus philippinensis</i> (Kamela/Sindhoor)	Euphorbiaceae	Leaf, flower, seed, fruit
151.	<i>Marsilea quadrifolia</i> (Sushnisag)	Marsileaceae	Whole plant
152.	<i>Melastoma malabathricum</i> (Ban padam)	Melastomaceae	Bark, leaves, flowers
153.	<i>Mentha aruensis</i> (Pudina)	Lamiaceae	Leaves
154.	<i>Mentha spicata</i> (Podena)	Lamiaceae	Whole herb.
155.	<i>Mesua ferrea</i> (Nageshwar)	Guttiferae	Flower, seed oil, stamens
156.	<i>Meyna spinosa</i> (Mon kata)	Rubiaceae	Leaves
157.	<i>Michelia champaca</i> (Champa)	Magnoliaceae	Flower, root, bark, bud
158.	<i>Mimosa pudica</i> (Larjwabati)	Mimosaoeae	Leaves, root
159.	<i>Mimusops elengi</i> (Bakul)	Sapotaceae	Bark, flowers, fruit
160.	<i>Mirabilis jalapa</i> (Nandadual/ 4 O' Clock plant)	Nyctaginaceae	Roots, seeds, tubers, leaves
161.	<i>Momordica charantia</i> (Karela/ Bitter gourd)	Cucurbitaceae	Leafs, fruits
162.	<i>Monochoria hastate</i> (Kachuri)	Pontederiaceae	Flower, leaf, stem
163.	<i>Morinda citeifolia</i> (Noni)	Rubiaceae	Roots, leaves, Fruits
164.	<i>Moringa oleifera</i> (Sajna)	Moringaceae	Bark, flower, fruit, leaves
165.	<i>Mucuna pruirens</i> (Cowhage/ Bandarhola/alkushi)	Fabaceae	Seeds, roots.
166.	<i>Mukia maderaspatana</i> (Bilari)	Cucurbitaceae	Tender shoot and root
167.	<i>Murraya koenigii</i> (Curry pata)	Rutaceae	Leaf, bark, root
168.	<i>Murraya paniculata</i> (Kamini)	Rutaceae	Bark, flower, leaf

Table 1 : Contd.....

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169.	<i>Mussaenda roxburghii</i> (Wild mussanda)	Rubiaceae	Bark, root and leaves
170.	<i>Myristica fragrans</i> (Nutmeg)	Myristicaceae	Fruit, nutmeg and mace
171.	<i>Nelumbo nucifera</i> (Indian lotus)	Nymphaeaceae	Rhizome, stem, flowers
172.	<i>Nerium oleander</i> (Sy. <i>N. Indicum</i>)(Indian oleander)	Apocynaceae	Bark, leaves, stem
173.	<i>Nyctanthes arbour-tristis</i> (Night jasmine)	Oleaceae	Leaves, bark, seed
174.	<i>Nymphaea stellata</i> (Water lilly/shapla)	Nymphaeaceae	Rhizome, stem, flowers
175.	<i>Neptunia oleraceae</i> (Horai/ Panilajuk)	Mimosaceae	Whole plant
176.	<i>Ocimum basilicum</i> (Sweet basil)	Lamiaceae	Whole plant
177.	<i>Ocimum canum</i> Syn. <i>O. americanum</i> (Holy basil)	Lamiaceae	Leaves, flower
178.	<i>Ocimum gratissum</i> (Ram tulshi)	Lamiaceae	Leaves, flower
179.	<i>Ocimum tenuiflorum</i> . Sy. <i>O.Sanctum</i> (Sacred basil)	Lamiaceae	Leaves, flower
180.	<i>Oldenlandia corymbosa</i> (Khet para)	Rubiaceae	Whole plant
181.	<i>Oroxylum indicum</i> (Kanaai dinga/ thana)	Bignoniaceae	Root, bark, fruit
182.	<i>Oxalis corniculata</i> (Amrul sak)	Oxaliadaceae	Leaves, stem
183.	<i>Peaderia foetida</i> (Gandha bhadali/skunk vine)	Rubiaceae	Leaves
184.	<i>Parkia javanica</i> (Puiikka tetoi)	Mimosaceae	Flowers and fruits
185.	<i>Peuraria thomsonii</i> (Kudzu bean)	Fabaceae	Tuberous roots
186.	<i>Passiflora edulis</i> (Passion fruit)	Passifloraceae	Fruit pulp
187.	<i>Phoenix humilis</i> (Khajoor)	Arecaceae	Fruit, seed, sap
188.	<i>Phyllanthus acidus</i> (Horboroi)	Euphorbiaceae	Fruit, root, seed
189.	<i>Piper betel</i> (Pan)	Piperaceae	Leaves
190.	<i>Piper longum</i> (Pipul)	Piperaceae	Spike, stem,root
191.	<i>Piper nigrum</i> (Kalimirch)	Piperaceae	Fruit and root
192.	<i>Peperomia pellucida</i> (Luchipata)	Piperaceae	Whole plant
193.	<i>Phyllanthus amarus</i> (Bhuamlaki)	Euphorbiaceae	Whole plant
194.	<i>Physalis minima</i> (Country gooseberry)	Solanaceae	Whole plant
195.	<i>Psidium guineense</i> (Ban peyara/ Ban gayam)	Myrtaceae	Leaves, fruits, bark, twig
196.	<i>Prerocarpus acerifolium</i> (Kanak chamap)	Sterculiaceae	Bark, leaves,flower
197.	<i>Pongamia pinnatga</i> (Indian beech)	Fabaceae	Bark, leaf, seed, flowers
198.	<i>Portulacaceae oleraceae</i> (Noni / Common purshane)	Portulacaceae	Whole plant
199.	<i>Punica granatum</i> (Dalim)	Punicaceae	Fruit, bark, root, flowers
200.	<i>Psoralea corylifolia</i> (Babchi)	Fabaceae	Seeds
201.	<i>Quisqualis indica</i> (Rangoon creeper/ Rongon)	Combretaceae	Fruit and seed
202.	<i>Rauwolfia serpentina</i> (Sarpagandha)	Apocynaceae	Root
203.	<i>Ricinus communis</i> (Verenda)	Euphorbiaceae	Seeds,leaves
204.	<i>Samanea saman</i> (Rain tree, vilaiyiti siris)	Fabaceae	Leaf, bark, root
205.	<i>Santalum album</i> (Chandan)	Santalaceae	Wood, root
206.	<i>Saraca asoca</i> (Asoka)	Caesalpiniaceae	Bark, root, flower
207.	<i>Schima wallichii</i> (Kanak)	Theaceae	Bark, flower
208.	<i>Schefflera venulosa</i> ,	Araliaceae	Roots
209.	<i>Scoparia dulcis</i> (Jangali jeera)	Scrophulariaceae	Whole plant
210.	<i>Sesamum indicum</i> (Til)	Pedaliaceae	Seeds and leaves
211.	<i>Sesbania grandiflora</i> (Bak phul)	Fabaceae	Barks, flowers, fruits.
212.	<i>Sida cordifolia</i> (Bala/Hethuthi/ Berala/ Balikari)	Malvaceae	Roots, leaves
213.	<i>Sida rhombifolia</i> (Jangli methi)	Malvaceae	Roots, leaves

Table 1 : Contd.....

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214.	<i>Smilax zeylanica</i> (Kumarika)	Smilacaceae	Roots
215.	<i>Solanum indicum</i> (Titbegun)	Solanaceae	Fruit, roots
216.	<i>Solanum nigrum</i> (Black night shade/ Ban begun)	Solanaceae	Whole plant
217.	<i>Solanum turvum</i> (Big titbegun)	Solanaceae	Fruits
218.	<i>Solanum viarum</i> syn. <i>S. Khasianum</i> (Sodom apple)	Solanaceae	Fruits
219.	<i>Solanum xanthocarpum</i> (Kantakari)	Solanaceae	Root
220.	<i>Spilanthes paniculata</i> (Tooth ache plant)	Asteraceae	Flower, leaves, seeds
221.	<i>Stachytarpheta indica</i> (Brazilian tree)	Verbenaceae	Whole plant
222.	<i>Stemona tuberosa</i>	Stemonaceae	Tuberous roots
223.	<i>Stevia rebaudiana</i> (Stevia)	Asteraceae	Leaves, stem
224.	<i>Streptocaulon juvenas</i>	Asclepiadaceae	Tubers
225.	<i>Spondias pinnata</i> (Amra)	Anacardiaceae	Bark, root, fruit
226.	<i>Stephania japonica</i> (Nimukhya)	Menispermaceae	Tuberous roots and leaves
227.	<i>Sterculia villosa</i> (Udal)	Sterculiaceae	Bark and petiole
228.	<i>Streblus asper</i> (Shaora)	Moraceae	Bark, latex and root
229.	<i>Suregada multiflora</i> (Suregada)	Euphorbiaceae	Bark and root
230.	<i>Syzygium cumini</i> (Jam/Black berry)	Myrtaceae	Roots, fruits leaf, bark
231.	<i>Syzygium jambos</i> (Rose apple /golap jam)	Myrtaceae	Leaf, fruita and bark
232.	<i>Tagetes erecta</i> (Gada/ marigold)	Asteraceae	Leaves and flower
233.	<i>Tamarindus indica</i> (Tetul)	Caesalpiniaceae	Bark, flower and fruits
234.	<i>Tectona grandis</i> (Teak)	Verbenaceae	Wood,bark, seed,flower.
235.	<i>Terminalia arjuna</i> (Arjuna)	Combretaceae	Barks, leaf, fruits
236.	<i>Terminalia bellerica</i> (Bahera)	Combretaceae	Fruit
237.	<i>Terminalia catappa</i> (Marking nut)	Combretaceae	Barks, kernel, fruits
238.	<i>Terminalia chebula</i> (Harataki)	Combretaceae	Fruit
239.	<i>Thespesia populnea</i> (Palashpipul)	Malvaceae	Leaf, bark, fruit
240.	<i>Thevetia peruviana</i> (Karabi)	Apocynaceae	Seed and root
241.	<i>Thunbergia grandiflora</i> (Gundi lata)	Acanthaceae	Climbing stem
242.	<i>Tinospora cordifolia</i> (Gulancha)	Menispermaceae	Steam
243.	<i>Toona ciliata</i> (Puma/ Toon)	Meliaceae	Bark, gum, flower, leaf.
244.	<i>Tridax procumbens</i> (Bhengra)	Asteraceae	Whole plant
245.	<i>Typhonium trilobatum</i> (Kharkon)	Araceae	Whole plant
246.	<i>Urena lobata</i> (Banokra)	Malvaceae	Bark, root and leaves
247.	<i>Urtica parviflora</i> (Phlomis/ drona)	Urticaceae	Leaves
248.	<i>Vernonia cinerea</i> (Shialmutra)	Asteraceae	Whole plant
249.	<i>Vanda teselata</i> (Rasna)	Orchidaceae	Leaves,roots
250.	<i>Vitax negundo</i> (Nishinda)	Verbenaceae	Leaves
251.	<i>Wedelia chinensis</i> (Wingaraaj)	Asteraceae	Whole plant
252.	<i>Withania somnifera</i> (Ashwagandha)	Solanaceae	Roots and leaves
253.	<i>Zanthoxylum limonella</i> (Bajna/ bojrang)		Fruit, bark, seeds
254.	<i>Zingiber officinale</i> (Ada)	Zingiberaceae	Rhizome
255.	<i>Zingiber serumbi</i> (Aam ada)	Zingiberaceae	Rhizome

- desirable varieties.
- Poor knowledge on scientific cultivation of quality medicinal plants.
 - Limited and inadequate marketing supports and infrastructure facilities for transportation, storage and processing.
 - Unorganized trade and lack of support price for medicinal plant.
 - Lack of awareness among the peoples regarding medicinal value of medicinal plants.
 - Lack of researches.
 - Limited application of advance on-farm agrotechniques.
 - Lack of application of innovative and novel technologies such as biotechnology, organic cultivation for enhancement of productivity.
 - Improper institutional arrangements and limited role played by financial institutions in setting up of industrial and medicinal plant based industrial units.

Prospects of medicinal plants in Tripura:

- Large scale homestead/school backyard cultivation of a few medicinal plants need to be encouraged for every family/educational institution with an aim to create awareness of herbal medicine. The species suitable for homestead/school backyard/gardening include Basak, Brahmi, Tulsi, Nayantara, Thankuni, Pudina, Ada, Halud, Nishinda, Asm ada, Punarnaba, Neem etc, which have domestic and International utility.
- Development of low cost and economically viable technologies to check loss during harvesting, processing, storage and marketing of medicinal plants need proper attention.
- Transfer of production technology to farming community along with wide publicity to conserve valuable wild species.
- Supply of quality planting materials to the targeted group.
- Financial support for production, storage and processing value added products need to be extended along with quality analytical facilities for easy marketing of produce as a service to the farming community.
- Special emphasis is also necessary to conserve the rare wild species of medicinal plants in its original habited *i.e.* in forest or *in-situ*.
- Strategies need to be worked out to integrate the

- growing of medicinal plants with the present cropping system as intercrops, border crops or under partial shade in the existing forest and horticultural orchards of Tripura.
- Efforts are also necessary to work out scientific production procedures for supply of quality planting materials, *i.e.* establishment and maintenance of herbal garden, nursery centres etc, in each Agri-subdivision as well as in each Agri sector of Tripura.
- Awareness campaign, training programme, distribution of literatures in local languages may be taken up to popularize the cultivation and conservation of medicinal plants.
- Local, traditional and indigenous valuable medicinal plants need to be patented in favour of our country's economy and geographical identification in the world.
- At present medicinal plants of Tripura have got very little support to popularize the commercial cultivation, marketing facilities and price support policy for growers are needed with a tie up or buy back policy arrangements.
- Lastly it may be mentioned here that in Tripura have diverse medicinal plants and to achieve the goal, a coordinated approach is required among the planners, researcher, scientists, extension worker, industrialists, ayurveda experts, developmental agencies, administrators, users and growers.

Conclusion:

The above mention medicinal plants are used by the interior and rural peoples for their health security, nutritional security, poverty elevation and used for common ailments. Tripura is blessed with huge diversity of medicinal plants and genetic resources. Systematic cultivation of medicinal plants is very less as compared to other crops available in the state. These medicinal plants are playing a vital role in providing food, nutritional and economic status to poor masses in the state. There is tremendous scope to popularize these in non-traditional areas and these crops may earn lot of foreign currency in the state in near future. Further, the huge genetic diversity in various medicinal plants has vast scope for collection, conservation (both in *in-situ* and *ex-situ*) and utilization of medicinal plants in the state.

REFERENCES

Das, S.C., Prakash, Jai, Samui, R.C. and Bshwas, T. (2010). Traditional medicinal plants used by Hilly Tripura. In Proceeding: International Conference on Horticulture (ICH-2009), Horticulture for Livelihood Security and Economic Growth., Bangalore, India, pp.1240-1246.

Das, S.C., Prakash, Jai, Deb, A.K. and Bishwas, T. (2009) . Medicinal value of underutilized fruits in Hilly Tripura. Abstract published in 2nd International Symposium on Medicinal and Nutraceutical plants, conducted by International Society for Horticultural Sciences (ISHS), Leuven, Belgium., November, 25-27.2009. AIIMS, New Delhi, India.108pp.

Das, S.C., Prakash, Jai, Deb, A. K. and Bishwas, T. (2009). Studies of indigenious and tribals. medicinal plants in Hilly Tripura. Abstract published in 2nd International Symposium on Medicinal and Nutraceutical plants, conducted International Society for Horticultural Sciences, (ISHS), Leuven, Belgium, November, 25-27.2009. AIIMS, New Delhi, India. 109pp.

