

Medicinal Plants in Local Health Traditions (LHTs): Dharmanagar Sub-division, Tripura, India



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ABSTRACT

Aim: Tripura is a small state of the northeastern part of India. The floral biodiversity is playing an important role in the traditional system of treatment in tribal and rural population. The research pertaining to the use of medicinal plants in ethnomedicobotany and formulations of study area is limited. The Medico Ethno Botanical Survey (MEBS) team of Regional Ayurveda Research Institute (RARI), Itanagar, documented the local health traditions (LHTs) from traditional healers of rural and tribal pockets of Dharamanagar sub-division, North district, Tripura.

Materials and methods: The MEBS has been conducted in tribal pockets and villages of Dharamanagar Range, Damchera Range, and Panisagar Ranges of Dharmanagar sub-division of Forest, North Tripura district, Tripura. Local health traditions (LHTs) were documented through discussion and interview with traditional healers in the prescribed format along with global positioning system (GPS) location and digital photography of healer and plant raw drugs used in the traditional medicine and also prepared formulations. Medicinal plants were identified by using local and regional flora followed by processing, mounting, and preservation. Documented information has been processed for scientific validation and Ayurvedic names were provided to medicinal plants.

Results and discussion: The MEBS conducted and documented six folk claims with six medicinal plants in prescribed formats to conserve traditional knowledge. The data presented systematically as botanical name, family, Sanskrit name, part used, morphological description of the plant, method of formulation, indication, and information of folk healer.

Conclusion: Folk healers of Dharmanagar sub division, Tripura collect and use medicinal plants from surrounding area in the treatment of *Sarpa Danstra* (snake bite), *Kamala* (jaundice), *Stanyajanan* (galactagogue), *Udarasula* (acute abdomen), *Alpamutrata* (oliguria), and *Vrana* (fresh wound) popularly. Further, scientific validation is required to understand the useful therapeutic benefits and large-scale medicine production for the treatment.

Clinical significance: The MEBS team noticed that some medicinal plants are used in the treatment of human diseases, such as *Alstonia scholaris* (L.) R. Br. in snake bite, *Cuscuta reflexa* Roxb. in jaundice, *Euphorbia herita* L. in galactagogue, *Scoparia dulcis* L. in acute abdomen, *Sida acuta* Burm. f. for oliguria, and *Mikania micrantha* Kunth for fresh wound. These plants need to be studied in detail in order to harvest the maximum benefit for the mankind.

Keywords: Dharmanagar, Folk claim, MEB survey, Traditional, Tripura.

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INTRODUCTION

Health is an important index for a society toward the development of nation. Individually, as family, and as a society together contribute toward a healthy nation. Local lifestyle regimens and biodiversity of the study area have a greater impact on the inhabitants and human life. Treatment of health disorders by the traditional system is playing an important role in tribal and rural population. The traditional Indian system of treating diseases is considerably cheap and economic. Most of the herbs used in the single or compound drug formulations are collected from the surrounding forest. The area selected for study was ruled by several emperors and the name of Dharmanagar is from the name of zamindar Dharmajeet Singh under the king of Tripura. About 70% of the geographical areas are comprised with the hilly terrain covered by dense forests and about 25% are plain area. The terrain is mostly undulating, hilly with small water streams, rivers, and fertile valleys. Forest is an integral part of the local population. The usage of fresh and widely available medicinal herbs from the foothills of Dharmanagar is unique in its action. The use of genuine plant materials is an important factor for the treatment of diseases and maintaining good health.

Tripura is a small landlocked state belonging to the northeastern part of India. Varied tribes of Tripura live in the

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foothills of the forests and depend on the flora and fauna for medications, food, shelter, and ritual practices. Dharmanagar is in strategic location and well connected with different parts of Tripura state. It is vital to ensure the medicinal flora that popularly benefits a large group of population for the treatment in health issues.

Several studies have been conducted to explore the traditional knowledge on healing practices of tribal and rural people of Tripura.

Documentation of 19 herbs used in the treatment gastrointestinal disorders and anti hemorrhagic by tribes namely Halam, Tripuri and Chakma tribes of North Tripura.¹ Naturally origin 48 folk medicinal plants are used to treat different disease conditions by using 20 single and 28 compound formulations by the rural traditional healers of North district, Tripura.²

Reports on the Medico Ethno Botanical Survey (MEBS) in the remote hills, forests, and rural areas of Tripura and collected information from tribes regarding antifertility, pain, and fever by using medicinal plants are available in their surrounding forests.^{3,4} Similarly, listing and preliminary documentation of medicinal plants used by tribes for the treatment of human illness and suffering has been also noticed.^{5,6} Some researchers worked with the Tripuri, Reang, Chakma, Manipuri, and Kolo tribal communities and enlisted the medicinal plants used for the treatment of various human health disorders.⁷⁻¹² Few researchers from scientific community have conducted the ethnomedicinal survey and enlisted medicinal plants with the uses and formulations used by the tribal, nontribal, and rural populace of Tripura state.¹³⁻¹⁷

Reviews of research pertaining to the documentation of ethnomedicinal plants and formulations of Dharmanagar, Tripura

state, is not in detail in respect of medicinal plants. Therefore, the Regional Ayurveda Research Institute (RARI), Itanagar, conducted MEBS to document the LHT from traditional healers of rural and tribal pockets of Dharamanagar forest sub-division of North district for the present study.

Study Area

The study area is predominantly covered with mountains and valleys and has a stable climate throughout the year. The mountain ranges to the north experience heavy rainfall and in the south it falls close to the coastal area. Currently, the geography of the district is surrounded by Karimganj district of Assam in east, Unakoti district in the west, Bangladesh in the north, and Mizoram in the south. Dharmanagar sub-division of North Tripura lies in 24° 22' 0.01" N and 92° 10' 0.01" E (Fig. 1).

MATERIALS AND METHODS

A systematic MEBS has been conducted during the period of 2018–19 to document the local health traditions (LHT) in tribal pockets and villages of Churaibari and Sanicheraa forest beats of



Fig. 1: Documentation of local health traditions in the forest foot hills of Dharmanagar sub division, North Tripura district, Tripura

Dharamanagar Range, Rahum Chera and Khedachera forest beats of Damchera Range, and Bagbassa and Haplang forest beats of Panisagar Ranges of Dharmanagar sub-division of Forest, North Tripura district, Tripura.

The information was collected and documented through discussion and interview with available traditional healers in the study area as per the LHTs format provided by the Central Council for Research in Ayurvedic Sciences (CCRAS), Ministry of AYUSH, Government of India, along with global positioning system (GPS) location and digital photography of the healer with name and address, plant raw drugs used in the traditional medicine, and prepared formulation. Collected medicinal plants were identified by using digital photographs of a plant, local and regional flora, and provided with description.¹⁸⁻²⁰ The nomenclature of plant species was updated as per the International Code of Botanical Nomenclature (ICBN) principles and rules.²¹ Identified specimens were processed, mounted, and preserved in internationally

recognized herbarium with the acronym of ARRI (Ayurveda Regional Research Institute) at Regional Ayurveda Research Institute, Itanagar, and nomenclature of species updated as per the ICBN principles and rules.^{22,23} Ayurvedic names have been provided to the plants collected and diseases with reference to the classical literature.^{24,25} The collected folk claims were validated with the classical and scientific literature.²⁶⁻²⁹

RESULTS

Medico Ethno Botanical Survey was conducted to document the LHT through interview of traditional healers in tribal and non tribal habitats and documented 6 folk claims with 6 medicinal plants in prescribed formats to conserve traditional knowledge (Fig. 2). The collected data have been presented systematically and are self-explanatory as botanical name, family, Sanskrit name, part used, morphological description of the plant, method of preparation, dose and duration, indication, and information of folk healer.



A Interview with traditional healer Mr. Porsat Bum Haram by MEBS team with local forest staff (GPS data: 27°08'01" N 88°23'33" E)



B Discussion of administration of medicine with traditional healer Mr. Porsat Bum Haram by MEBS team with local forest staff (GPS data: 27°08'01" N 88°23'33" E)



C Documentation of LHT from traditional healer Mr. Porsat Bum Haram by MEBS team with local forest staff (GPS data: 27°08'01" N 88°23'33" E)



D Demonstration of medicine preparation by Mr. Lalchung Monihalan with other traditional healers to MEBS team (GPS data: 24°15'05"N 92°15'28"E)

Figs 2A to D: Glimpse of documentation of local health traditions (LHT) at Dharamanagar sub-division, North Tripura District, Tripura

Botanical name: *Alstonia scholaris* (L.) R. Br. (Acc. No. ARRI-3064; GPS data: 25° 58' 27" N 91° 32' 95" E)

Family: Apocynaceae

Sanskrit name: *Saptaparni*

Part used: Root bark

Indication: *Sarpa danstra* (snake bite)



Morphological description of the plant: It is a perennial large evergreen tall tree with umbrageous crown. Leaves in whorls, shining above, pale beneath, bitter milky juice, short petiole, bark grey, rough; branches whorled; young branchlets copiously lenticellate, flowers greenish-white, fruit with two long follicles, seeds oblong with brown hairs at both ends.

Method of preparation, dose, and duration: Fresh root bark is grounded with water to prepare required quantity of fine paste. This is applied for half an hour. Similarly, the root is also used to prepare 50 mL fresh juice, which is administered orally, three times in first hour.

Information of folk healer: Porsat Bum Halam, Age-96, Male, Zoitang, Panisagar Range, North Tripura District.

Botanical name: *Cuscuta reflexa* Roxb. (Acc. No. ARRI-3851; GPS data: 24° 22' 42" N 92° 13' 51" E)

Family: Convolvulaceae

Sanskrit name: *Amaravalli*

Part used: Root

Indication: *Kamala* (jaundice)



Morphological description of the plant: Perennial herb with rootless and leafless twining parasite, long stem with yellowish green, closely twining, branched, glabrous, flowers in solitary or umbellate clusters in racemes, sometimes dotted with red, fruit globose—ovoid capsule, seeds black, and albuminous with a small embryo.

Method of preparation, dose, and duration: Crush the root and mix with water to prepare 100 mL fresh juice. It is orally administered three times a day.

Information of folk healer: Porsat Bum Halam, Age-96, Male, Zoitang, Panisagar Range, North Tripura District.

Botanical name: *Euphorbia hirta* L. (Acc. No. ARRI-3575; GPS data: 27° 08' 01" N 88° 23' 33" E)

Family: Euphorbiaceae

Sanskrit name: *Dugdihika*

Part used: Whole plant

Indication: *Stanyajanana* (galactagogue)



Morphological description of the plant: Annual herb, hispid with long often yellowish, crisped hairs, stems terete, ascending branches, quadrangular, leaves opposite, inflorescence with many male florets are surrounded with female florets in involucre at axillary or terminal, minute capsules, reddish brown seeds.

Method of preparation, dose, and duration: Whole plant is used to prepare 100 mL decoction by adding water. Decoction is orally administered three times a day for 4 days.

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Information of folk healer: Porsat Bum Halam, Age-96, Male, Zoitang, Panisagar Range, North Tripura District.

Botanical name: *Mikania micrantha* Kunth (Acc. No. ARRI-2760; GPS data: 25° 39' 18" N 94° 09' 14" E)

Family: Compositae

Sanskrit name:

Part used: Leaf

Indication: *Vrana* (fresh wound)



Morphological description of the plant: Annual, glabrous, extensive, twiner, leaves ovate-triangular, petiolate, pubescent, heads four flowered at axil, white, achenes blackish-brown, pappus reddish.

Method of preparation, dose, and duration: Quantity sufficient fresh leaves are used to prepare fine paste and applied on affected area for every 2 hours till the wound heals.

Information of folk healer: Abdul Basir, Age-41, Male, Halflong Beat, Panisagar Range, North Tripura District.

Botanical name: *Scoparia dulcis* L. (Acc. No. ARRI-3754; GPS data: 24° 15' 05" N 92° 15' 28" E)

Family: Plantaginaceae

Sanskrit name:

Part used: Leaf

Indication: *Udarasula* (acute abdomen)



Morphological description of the plant: Annual erect much branched under shrub, hairy, simple opposite glandular leaf with short petiole, small white flowers at axillary or racemose. Capsule globose, many angled seeds.

Method of preparation, dose, and duration: Decoction is prepared with fresh leaves and 100 mL is administered orally once daily for 3 days before food.

Information of folk healer: Lalchung Monihalan, Age-39, Male, Thangnang, Panisagar Range, North Tripura District.

Botanical name: *Sida acuta* Burm. f. (Acc. No. ARRI-3616; GPS data: 27° 15' 00" N 88° 36' 16" E)

Family: Malvaceae

Sanskrit name: *Bala* (*bheda*)

Part used: Leaf

Indication: *Alpamutrata* (oliguria)



Morphological description of the plant: Annual, under shrub, branched, hairy, leaves linear, serrate, glabrous on both sides, flowers at axil, two to three in cluster, fruit 5–6 mm, toothed on the dorsal margin, two awns, seeds smooth and black.

Method of preparation, dose, and duration: Fresh leaves are used to prepare decoction and 100 mL of prepared decoction administered orally thrice daily before food for 1 week.

Information of Folk healer: Lalchung Monihalan, Age-39, Male, Thangnang, Panisagar Range, North Tripura District.

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DISCUSSION

Plants have their own phytochemical properties and play a very important role in curing of various health disorders. *Alstonia scholaris* (L.) R. Br. (Saptaparni) is having properties like *tikta*, *kasaya rasa*, *laghu* and *snigdha guna*, *usna virya* and *katu vipaka* used as *kushtaghna* and *raktasodhaka*.²⁶ The plant has shown antivenom activity in the recent research work.^{27,28} Thereby, this plant is used in the cases of snake bite.

The *Sida acuta* Burm. f. (*Bala bheda*) is *tridoshahara*, *deepana*, *sothahara*, and useful in fever, *daha* (burning sensation of the body). It is regarded as *sheeta*, *kashaya rasa pradhana* and useful in nervous and urinary diseases.²⁹ The plant is reported for its antiurolithiatic activity in animal model.³⁰ Therefore, this plant is helpful in the cases of oliguria.

Similarly, the herb *Cuscuta reflexa* Roxb. (*Amaravela*) is bitter in taste, expectorant, carminative, anthelmintic, purgative, and diuretic. It purifies the blood and cleanses the body. It reduces inflammation (*Sotha*) and useful in jaundice (*Yakrit vikara*) and pain in the muscle and joints.³¹ It is proved that the plant is having hepatoprotective activity by using the animal model.³² It is widely used in diseases of the liver and spleen as it acts on blood.

The plant *Euphorbia hirta* L. (*Dugdhika*) is chiefly used by nursing mothers when the production of milk is inadequate.³¹ An aqueous extract of the plant has been studied on the animal model to establish the galactagogue effect.³³ Healers commonly refer this plant to increase the lactation.

The herb *Scoparia dulcis* L. decoction is used in the acute abdomen.³¹ The ethanolic extract of whole herb of *Scoparia dulcis* L. and *Ficus racemosa* L. showed the analgesic activity in Swiss albino mice. This study helps to confirm the treatment of the acute abdomen.³⁴

The *Mikania micrantha* Kunth is widely used in the treatment of fresh wounds. It may be due to its anticoagulation and granulation properties.³⁵ The experimental study of fibroblast cells by the starch assay and external application of the ointment prepared from leaf juice powder with Vaseline (1:1 w/w) have shown wound healing activity.^{36,37}

CONCLUSION

The use of medicinal plant in traditional healing by the folk healers of Dharmanagar, Tripura, is very scattered and plants found are very common in revenue and forest lands. These are used in treatment of *Sarpa Danstra* (snake bite), *Kamala* (jaundice), *Stanyajanan* (Galactagogue), *Udarasula* (acute abdomen), *Alpamutrata* (oliguria), and *Vrana* (fresh wound) popularly. Apart from *Mikania micrantha* Kunth, remaining plants are referred in the classical literature. Many more research work has been carried out on selected medicinal plants. A very limited study has been carried out on luxuriantly growing wild weed plants. This is the time to find the alternative source of raw drugs to the pharmaceutical industry to meet the required demand of the medicine. It is necessary to study listed medicinal plants scientifically to validate the claim mentioned by the healers to reach all needy population.

CLINICAL SIGNIFICANCE

The MEBS team noticed that some medicinal plants are used in the treatment of human diseases, such as *Alstonia scholaris* (L.) R. Br. in

snake bite, *Cuscuta reflexa* Roxb. in jaundice, *Euphorbia herita* L. in galactagogue, *Scoparia dulcis* L. in acute abdomen, *Sida acuta* Burm. f. for oliguria, and *Mikania micrantha* Kunth for fresh wound. These plants are to be studied in detail in order to harvest the maximum benefit for the mankind.

The scientific validation of these medicinal plants may help as a primary or substitute for rare and endangered medicinal plants in preparation of disease-specific formulations.

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हिंदी सारांश

स्थानीय स्वास्थ्य परंपराओं (एलएचटी) में औषधीय पादप: धरमनगर उप-प्रभाग, त्रिपुरा, भारत

उद्देश्य: त्रिपुरा भारत के पूर्वोत्तर भाग का एक छोटा सा राज्य है। आदिवासी और ग्रामीण जनसंख्या में उपचार की पारंपरिक पद्धति में पुष्प विविधता एक महत्वपूर्ण भूमिका निभाती है। अध्ययन क्षेत्र के प्रजातीयचिकित्सा वनस्पति और औषधयोग में चिकित्सीय पादपों का उपयोग करने के लिए अनुसंधान सीमित है। क्षेत्रीय आयुर्वेद अनुसंधान संस्थान (आरएआरआई), ईटानगर के चिकित्सा प्रजातीय वानस्पतिक सर्वेक्षण (एमईबीएस) दल ने धरमनगर उप-प्रभाग, उत्तर जिला, त्रिपुरा के ग्रामीण और आदिवासी क्षेत्रों के पारंपरिक चिकित्सकों से स्थानीय स्वास्थ्य परंपराओं (एलएचटी) का प्रलेखन किया।

सामग्री और विधियां: एमईबीएस ने धरमनगर वन उप-प्रभाग, उत्तर त्रिपुरा जिला, त्रिपुरा के धरमनगर रेंज, दमचेरा रेंज और पाणिसागररेंज की आदिवासी क्षेत्रों और गाँव में सर्वेक्षण किया। स्थानीय स्वास्थ्य परंपराओं (एलएचटी) का प्रलेखन एक विनिर्दिष्ट प्रारूप में ग्लोबल पोझिशनिंग सिस्टम (जीपीएस) और चिकित्सक की डिजिटल फोटोग्राफी तथा पारंपरिक औषधि में प्रयुक्त पादप अपरिष्कृत औषधि और निर्मित औषधयोग के साथ पारंपरिक चिकित्सकों के विचार-विमर्श और साक्षात्कार के माध्यम से किया गया। प्रसंस्करण, माऊनटिंग और संरक्षण के साथ-साथ स्थानीय और क्षेत्रीय पुष्प का प्रयोग कर औषधीय पादपों की पहचान की गई। वैज्ञानिक विधिमान्यकरण के लिए प्रलेखित जानकारी को भेज दिया गया और औषधीय पादपों को आयुर्वेदिक नाम दिए गए।

परिणाम और विचार-विमर्श: एमईबीएस ने पारंपरिक जानकारी को संरक्षित करने के लिए निर्धारित प्रारूप में छह लोक दावों के साथ छह औषधीय पादपों का सर्वेक्षण किया और उनका प्रलेखन किया। आंकड़ों में वानस्पतिक नाम, कुल, संस्कृत नाम, प्रयुक्त भाग, पादप का मोर्फोलोजिकल विवरण, औषधयोग की विधि, चिकित्सीय उपयोग और लोक चिकित्सक की जानकारी व्यवस्थित रूप से दी गई।

निष्कर्ष: धरमनगर उप-प्रभाग, त्रिपुरा के लोक चिकित्सकों ने मुख्यतया सर्प दंश (स्नेक बाइट), कामला (जौंडिस), स्तन्यजनन (ग्लेक्टागोग), उदरशूल (एक्यूट अब्डोमन), अल्प मूत्रता (ओलिगुरिया) और व्रण (फ्रेश वुण्ड) के उपचार के लिए आस-पास के क्षेत्र से औषधीय पादपों को एकत्रित किया और उनका प्रयोग किया। इसके अतिरिक्त, उपचार के लिए लाभकारी चिकित्सकीय लाभों और व्यापक पैमाने पर औषध उत्पादन को समझने के लिए वैज्ञानिक विधिमान्यकरण की आवश्यकता है।

नैदानिक प्रासंगिकता: एमईबीएस दल ने यह देखा कि कुछ औषधीय पादपों का प्रयोग मानव रोगों यथा सर्पदंश में एलस्टोनिया स्कोलरिसिस (एल.) आर. बीआर. कामला के लिए कस्कुटा रफ्लेक्सा रोस्ब., स्तन्यजनन के लिए यूफोरबिया हेरिटा एल., उदरशूल के लिए स्कोपारिया डलकिस एल., अल्प मूत्रता के लिए सिदा एक्युटा बर्म. एफ., और व्रण के लिए मिकानिया मिक्नेथा कुंठ के उपचार में किया गया। मानवता के अधिकतम लाभ के लिए इन पादपों के अध्ययन को विस्तार में किए जाने की आवश्यकता है।

मुख्य शब्द: धरमनगर, लोक दावा, एमईबी सर्वेक्षण, पारंपरिक, त्रिपुरा।