Traditional usage of medicinal plants among the Mog community people and their chemical justification

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ABSTRACT

An ethno botanical study focused on medicinal utility of plants was carried out among the Mog communities of Tripura, India with aims to document the traditional knowledge of the medicinal plants used in various ailments. The information was based on normal conversation, interview and discussion with local herbal practitioners, elderly men and women of different tribal communities. In this study, a total of 20 plant species belonging to 16 families were described which have been used in the treatment of around 15 diseases. Most frequently medicated claims were arthritis, cold and cough, tumour. All these claims need to be subjected to previous established literature to validate the potentiality of these plants and plant parts as drugs.

Keywords: Mog community, ethnomedicine, drugs, arthritis, tumour, cold, cough

INTRODUCTION

Tribal people are the ecosystem people who live in harmony with the nature and maintain a close link between man and environment [1]. All cultures have traditions of folkloric medicine that include the use of plants and other ethno pharmacological products [2]. Primitive tribal people have used plants to cure a variety of ailments but they keep no records and the information is mainly passed on verbally from generation to generation [3].Traditional healers employ methods based on the ecological, socio-cultural and religious background of their people to provide health care [4-6]. Plant derived medicines are widely used because they are relatively safer than the synthetic alternatives, they are easily available and cheaper [7]. The biological evaluation of plant products on the basis of their use in the traditional herbal system of medicine develops a basic platform for the recent and newer drug discovery methods, development of new drugs from different plant sources [8].

Tripura is India's third smallest hilly state in the North-eastern part of the country (Figure 1). Tripura state lies between 22^0 56' to 24^0 32'N latitude and between 90° 09′ to 92° 20′E longitudes covering an area of 10,491 sq.km. In Tripura, 19 different tribal communities are found to dwell, viz. Tripura, Mog, Riang, Shantal, koki, Noatia, Lusai, Halam, Jamatia, Chakma and others. The climate of Tripura is characterized by intermediate temperature and highly humid atmosphere. During summer (April-May), maximum temperature reaches 38°C. Humidity remains high throughout the year. In summer relative humidity ranges 50-75% while during monsoon it remains over 85%. The present study was carried out in Tripura, India. Several ethno-botanical studies [9-

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14] in the state have documented various healing plants with folk recipes. However, there is no report on ethnomedicinal plant used by Mog community people of Tripura, India.

MATERIALS AND METHODS

Exhaustive field survey has been undertaken covering all the seasons for gathering information on each and every species useful in herbal medicine among the Mog. Survey conducted in different villages of Tripura state. The present research study was undertaken to document the plants solely used by the Mog tribe of Tripura state for the treatment of various diseases. The information's on medico-botanical aspects was collected by questionnaires to the traditional practioners .This being a descriptive research, survey method involving collection of data through questionnaire was adopted. The plants were collected from the study area, dried, preserved and identified with the help of available literature [15].Voucher specimens were deposited in the Herbarium of Department of Life Science, Tripura University Herbarium (TUH).

RESULTS AND DISCUSSION

About the Mog community

According to the 2001 census report there are 30, 385 persons of Mog community in Tripura. By religion they are Buddhist. Their language is grouped under Tibeto-Chainese family. Mogs are dependent on jhum cultivation. By nature they are not so much active for advancement of life and entirely depend on surrounding environment for livelihood. They also rely on forest products and medicinal plants for sustaining their life.

Taxonomic enumeration

The reported plants were arranged according to their scientific name, family, vernacular names (as recorded during the field work), parts used and therapeutic uses.

Acmella paniculata (Wall. ex DC.) R.K. Jansen; Asteraceae; Hang phoai; Stem; The stems are chewed for glossodynia.

Validation: The extracts of different parts of plant used as antimicrobial activity. Flavonoids were detected in petroleum ether, ethyl acetate and methanol extracts. Alkaloids were detected in petroleum ether, chloroform, ethyl acetate, and methanol extracts and saponins in petroleum ether, chloroform, ethyl acetate, and methanol extracts [16].

Acorus calamus L.; Acoraceae; Lang Hing; Rhizome; The sundried rhizomes along with mustard oil are applied locally for consecutive 15 days for curing arthritis.

Validation: *Acorus calamus* was found to be effective in case of Rheumatoid arthritis with pain, swelling and functional disability [17].

Adhatoda vasica Nees; Acanthaceae; Vasakai; Leaves; The decoction of the leaves along with honey is used for severe cold and cough.

Validation: *Adhatoda vasica* consists of pyrroquinazoline alkaloid mainly Vasicine, Vasicol, Vasicinone along other minor constituents. Vasicine and Vasicinone showed bronchoconstrictory activity *in vivo*, however the combination of both the alkaloid (1:1) showed bronchodilatory activity both *in vivo* and *in vitro* [18].

Alstonia scholaris (L.) R. Br.; Apocynaceae; Chaunduba; Latex and bark; The milky latex is used to treat ulcer. The bark is used against snake bite.

Validation: *Alstonia scholaris* shows hepatoprotective effect of induced by Carbon tetrachloride [19].

Amorphophallus bulbifer (Roxb.) Blume; Araceae; Krong shi; Whole plant; The tuberous roots are make into small tablets and are orally taken twice in a day for consecutive one week for curing piles. The decoction of the root is filtered and taken for severe pain.

Validation: *Amorphophallus bulbifer* possesses anti-inflammatory and analgesic properties and this lends some support for its use in traditional medical practice [20].

Cassia tora L.; Fabaceae; Dangii; Seeds; The dried seeds are used for curing Xerophthalmia.

Validation: The major pharmacological activities are concentrated on anthraquinone glycoside and its derivatives. A number of chemical constituents have been isolated and justified [21]. However, the active constituents for Xerophathalmia have to be identified.

Caesalpinia bonduc (L.) Roxb; Caesalpiniaceae; Achonangri; Leaves; Seeds; The powdered seeds along with mustard oil are applied locally for curing arthritis. The decoctions of seeds are used for antihelmintic property.

Validation: The methanolic, ethyl acetate and water fractions of crude extracts exhibit in vitro activity against the growth of an array of pathogenic bacteria and fungi [22].

Clitoria ternatea L.; Fabaceae; Nilkantha; Roots; The dried roots are made into small tablets and orally consumed for neurological disorders.

Validation: The ethanol extract of *Clitoria ternatea* can prevent renal damage from APAP induced nephrotoxicity and it is likely to be mediated through active phytoconstituents and its antioxidant activities [23].

Cissampelos pareira L.; Menispermaceae; Bokhrai; Leaves; The decoction of leaves are used for lowering blood pressure.

Validation: The root and leaves contain several alkaloids and essential oil (0.2%).The methiodide and methchloride derivatives of alkaloid hayatine were reported to be potent neuromuscular blocking agents that lower blood pressure [24].

Eclipta alba (L.) Hassk.; Asteraceae; Sigrapainghuo; Leaves : the leaves are used for hair tonic.

Validation: Wedelolactone(1.6%), Desmethylwedelolactone, Desmethyl-wedelolactone-7-glucoside, stigmasterol have been isolated from *Eclipta alba* [25]. However, the active constituent delivering the property for hair tonic need to be identified.

Melastoma malabathricum L.; Melastomataceae; Ping huo; Bark and Seeds; The decoction of the bark is used for arthritis. The seeds are used against diarrhea.

Validation: A number of compound have been isolated from *Melastoma malabathricum* viz., The compounds are α-amyrin, patriscabratine , auranamide , quercetin , quercitrin and kaempferol-3-*O*-(2”,6”-di-*Op-trans*-coumaroyl)-β-glucoside [26]. Interestingly the *in vitro* and *in vivo* assay, the isolated compounds from this plant exhibited many biological activities such as anti lipid peroxidation, radical scavenger and anti-inflammatory activity.

Peperomia pellucida (L.) Kunth; Piperaceae; Tigyaung; Roots; The decoction of the roots are used for tumors.

Validation: The peperomins, have cytotoxic or anticancer activity *in vitro* [13].

Phyllanthus fraternus G.L. Webster;a Euphorbiaceae; Nindrai; Bark; The decoction of the bark is used against Malaria. The fresh or dried fruits are chewed during jaundice.

Validation: At doses of 200 mg/kg, all the ethanolic and dichloromethane extracts produced significant chemosuppressions of parasitaemia (of > 60% for *Phyllanthus fraternus* whole plant when administered orally. The most active ethanolic extract that of *Phyllanthus fraternus* reduced parasitaemia by 73% [27].

Phrynium placentarium (Lour.) Merr.: Marantaceae; Dungphau; Roots; The root powdered is make in to small tablets and used for renal disorders.

Validation: There is no report on the active constituents of *Phrynium placentarium*.

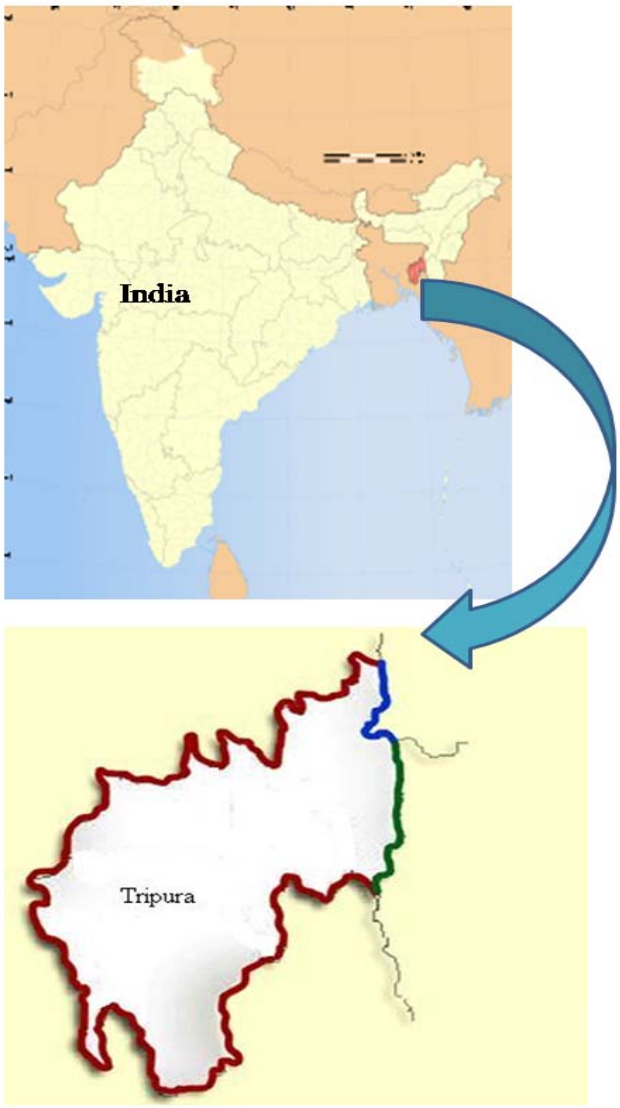

Figure 1. Geographical Location of Tripura.

Scoparia dulcis L.: Scrophulariaceae; Dung bang; Leaves; The dried powdered leaves are used as an analgesic. The decoction is used for diabetes.

Validation: *Scoparia dulcis* is rich in flavones, terpenes and steroids. Main chemical constituents such as scoparic acid A-C, scopadulcic acid A and B, scopadulciol, scopadulin and ammelin have been shown to contribute to the observed medicinal effect of the plant [28].

Solanum torvum Sw.; Solanaceae; Kharing Khras; Leaves and Roots; The leaf decoction is orally taken for asthma and whooping cough. Ashes of dried roots are applied locally for curing condyloma.

Validation: *Solanum torvum* contains a number steroidal glycosides viz. Torvoside A-L. Non alkaloidal constituents like tetratriacontanoic acid, sitosterol, stigmasterol and campesterol have also been isolated and identified from *S. torvum* leaves. [29].

Typhonium trilobatum (L.) Schott; Araceae; Ping Mohora; Roots; Soar throat; The paste of the root is applied locally at night before bedtime for consecutive 3 days.

Validation: The methanolic, ethyl acetate and chloroform extracts of *Typhonium trilobatum* possess good wound healing properties which may be attributed to the individual or combined action of phytoconstituents like, flavanoids, alkaloids, saponins and tannins [30].

Kalanchoe pinnata (Lam.) Pers.; Crassulaceae; Roikapambo; Leaves; The decoction of the leaves are used for antihelmentic property.

Validation: Phytochemical analysis of the crude extracts revealed the presence of tannins which were shown to produce anthelmintic activity [31].

Leucas lavandulaefolia Rees; Lamiaceae : Jogilawa; Extracted leaves juice is applied to the nostril of sinus patient

Validation: The pharmacognostical profiles of *Leucas lavandulaefolia* Rees though have been identified, however, the active principle for the disease needs to be identified [32].

Oroxylum indicum (L.) Ventenat; Bignoniaceae; Gungnishita; Gastritis; The powdered bark is taken in empty stomach early in the morning for consecutive one week.

Validation: The methanolic extract of *Oroxylon indicum* could serve as a potential source for anticancer metabolites [33]. Baicalein and Oroxylin were also isolated from the taxa possessing strong antimicrobial activity [34]. However no such active compound has been so far isolated from the species that could be correlated to the present result.

In the present study most of the plant use are tried to link with their active components however in some case we fail due to presence of available literature, those plants need immediate attention for new drug discovery. Thus it can be said now that the discovery of different plant species used by the Mog community tribe habiting in Tripura of North East India paves way the need to undertake a detailed ethno botanical study of the whole state of Tripura involving as many tribes as possible. In spite of the rich wealth of bio-resources and potential, development is far from meeting the expectations of local people in Tripura mainly in terms of existing health care facilities and herbal industries. The data obtained in the present work will be useful in synthesis of new herbal drugs with various combinations of plants, which can be used in the treatment of different diseases at global level generally and in Tripura, India particularly.

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