

TRADITIONAL HERBAL REMEDIES FOR VARIOUS AILMENTS WITHIN THE RURAL COMMUNITIES IN THE DISTRICT OF BANKURA AND PURULIA, WEST BENGAL, INDIA

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ABSTRACT

Objective: Scientific validation of ethno-pharmacologically used plants and their utilization for therapeutic intervention can be a major source of affordable primary health care system especially in the rural areas. The aim of the study was to assess the potentiality, usefulness and dependence of human beings on herbal resources and the acceptability of traditional remedies in recent times.

Methods: Field explorations regarding the use of traditional medicinal plants within some rural communities were conducted. The information on the medicinal application of plants is based on the interview of local traditional healers, elderly village persons and patients.

Results: The various plant species and the parts used along with the mode of administration and the indications are listed and presented.

Conclusions: The outcome of the study definitely speaks about the need to identify, conserve and protect the herbal medicines vis-à-vis educating people to use the plant safely and rationally.

Keywords: Ethno-botany, Field-exploration, Rural Bengal, Medicinal plants, Traditional Knowledge.

INTRODUCTION

According to the latest estimate of World Health Organization (WHO), the primary health care of 70-95% of the population in the developing countries is based on traditional medicine while in developed countries like Germany and Canada, 80% and 70% of the population respectively have used complementary and alternative medicine at least once [1]. Medicinal products from plants or other natural sources have taken a very large share of the healthcare market [2]. The dependence and reliability on the herbal drugs is increasing rapidly and is growing popular.

India is a place of great bio-geodiversity with its rich source of medicinal plants distributed among the different geographical and ecological environment within the country. The country has an

enriched history regarding the use of traditional medicine from herbal and non-herbal sources which is well documented and exhaustively practiced. The 'Atharva Veda', 'Charaka Samhita' and many other similar documents are compilations of the enriched folk medicine and their uses [3]. The Ayurveda, Siddha and Unani comprising the classical systems of Indian Medicine employed a large number of medicinal plants for various ailments.

The study was undertaken with an aim to document and catalog the medicinal plant still in use among the rural communities, morphological parts of the plant used, mode and method of application and indigenous folk medicinal application. Based on any new application a lead molecule of medicinal use for future can also be explored.

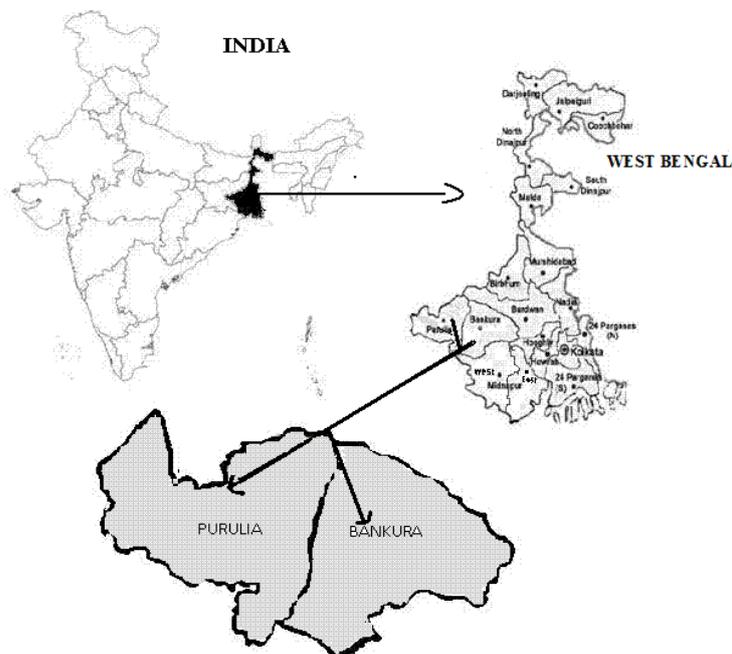


Fig. 1: Geographical location of the study area.

Study area

The district of Bankura and Purulia constitutes part of West Rarrh of West Bengal which is considered as the extended part of Chotanagpur Plateau. Hot and humid climate with a variation of temperature from above 45° C (in summer) to below 10°C (during winter) and rainfall from the south west monsoon are some of the ecological and climatic features of the area. Small patches of forest, some remarkable relict hills are also found. Three types of soil (alluvial, red and laterite) constitute the geology of the West Rarrh region.

The district of Purulia that has been taken as the study area is the western-most district of the state of West Bengal and its latitudinal and longitudinal extents are from 22°42'35" to 23°42'00" North and from 85°49'25" to 86°54'37" East respectively. The Tropic of Cancer passes through it and the district shares its boundaries with the state of Jharkhand on the north- west, west and south- west side. The district of Burdwan lies on its north while the Districts of West-Midnapur and Bankura fall to its east side (Fig 1). The total geographical area of the district is 6259 sq. kms with an altitude variation from 250-700 m.

Bankura, the fourth largest district of West-Bengal in terms of area is located in the western part of the state. It is surrounded by the district of West-Midnapur and Hoogly in the east, the district of Burdwan in the east and the north while Purulia covers it in the west side. It has an area of 6882 sq. kms and the latitudinal and longitudinal extents are from 22° 38' to 23°38' and 86°36' to 87°47' respectively. The average rainfall within the district is 1100-1400 mm and the maximum and minimum temperatures are about 45°C and 10°C respectively.

The study was mainly conducted along the tribal areas and rural communities adjoining the Mukutmanipur Region (both Bankura and Purulia) and the Jharbagda hilly areas in the district of Purulia and among some of the villages that lie alongside the bank of River Damodar in the district of Bankura. Some of the villages in the Bankura District were selected as per the information regarding the presence of some practicing traditional healers within the area.

METHODOLOGY

To document the utilization of indigenous medicinal plants regular field trips and survey was carried out during November, 2007 to September, 2008 to the different villages in the district of Bankura and Purulia. The period of survey was of an extended time period covering all the seasons to maximize the information and identification of the herbs. The information documented in this

paper was gathered through the individual and group interview of general local people (of both tribal and non-tribal areas) of various age groups, aged and experienced local residents, traditional herbal medicine practitioners (vaidyas and kabirajs as they are known as in these areas) and also some sellers of medicinal plants. Some of the information regarding the efficacious use of those herbal medicines was verified by interviewing some patients. Preliminary identification of plant specimen, their local name and information related to their use were recorded with the help of traditional local physicians and elderly villagers. Information obtained from each source were cross-checked and verified with atleast three to five different informants which also included some patients. The collected plant specimen were identified with the botanists from The Botanical Gardens, Shibpur, Howrah, West Bengal and the herbarium specimen of some of the plant species were deposited at the museum of Dr. B.C Roy College of Pharmacy and Allied Health Sciences, Durgapur, India.

RESULTS AND DISCUSSION

The present study revealed that traditional system of medicine is still being practiced among some rural ethnic groups and medicinal plants play a vital role in the primary healthcare among the rural communities. Within the area of study, a considerable number of plants including herbs, shrubs, trees and climbers are found to be in use. The plants are being used for various diseases and ailments like skin disorders, diarrhea, jaundice, piles, urinary problems etc. Apart from this one plant is also being used in ethno-veterinary practices in the treatment of fracture in cattle. The preparations are made by using single plant part or a combination of several parts of a single plant or of various plants depending on the condition of the patient and disease. For example in the indication of cough, cold and fever a combination of leaf extract of *Adhatoda vasica* is administered along with the leaf juice of *Ocimum sanctum* and honey. In the treatment of alopecia the seeds of *Sesamum indicum* and mustard (white) is crushed to paste and applied externally on head. While most of the ailments are cured by oral administration, conditions like foot sore, boils, cuts and wounds are cured by topical application of the medicament. The information was collected by interviewing a diverse range of people encompassing the prescribers as well as the beneficiaries. The information gathered was arranged alphabetically with botanical names, family, local and vernacular name, parts used, indications and the mode of application.

Since the listed information was incorporated after cross-checking and verification by 3-5 different informants, a number of plants have been omitted from Table 1. Some of the plants lacking proper cross-reference are presented below in Table 2.

Table 1: Account of the medicinal plants within the districts of Bankura and Purulia, West Bengal, India (study area)

S. No.	Scientific Name & Family	Plant Bengali name (B)/ English name	Parts used	Mode and Indication
1	<i>Abutilon indicum</i> (Linn) Sweet (Malvaceae)	Petari (B), Country mallow	Root-paste, Seeds	On boils and abscess. Seed oil for skin disorders (scabies).
2	<i>Acacia Arabica</i> (Lam.) Willd. (Leguminosae)	Babla (B), Indian gum Arabic tree, Acacia	Juice of leaves, Gum	In sore caused by water.
3	<i>Achyranthes bidentata</i> Blume (Amaranthaceae)	Chorkanta (B), Ox knee	Root-paste, Juice of leaves	In boils and acne, and in emesis.
4	<i>Adhatoda vasica</i> (Linn) (Acanthaceae)	Vasaka(B), Malabur Nut.	Juice of leaves	In mild asthma, cough, piles and bleeding gum.
5	<i>Aegle marmelos</i> (Linn.) Corr. (Rutaceae)	Bael, Holy fruit tree	Pulp of fruit, mucilage	In indigestion and constipation and dysentery.
6	<i>Asteracantha longifolia</i> (L.)Nees (Acanthaceae)	Kulekhara(B), Hygrophila	Boiled extract of the leaves.	In high blood pressure and in anaemia.
7	<i>Annona squamosa</i> Linn. (sweet) (Annonaceae)	Aata (B), Custard apple, Sugar apple	Leaf-paste, Seed-paste	Leaves in cuts and wounds, Seeds to destroy lice and is abortifacient.
8	<i>Ananus comosus</i> (Linn.)Merill (Bromeliaceae)	Aanaras(B), Pine apple	Fruit and Root	In indigestion and as anthelmintic (Chewing the root).
9	<i>Azadirachta indica</i> A. Juss (Meliaceae)	Neem, Margosa tree	Leaf, leaf-paste, leaf extract, Stem Juice, small twigs	Boils, cuts and wounds, fever, stomach and tooth ache, blood sugar. In inflammation and skin disorders.
10	<i>Butea monosperma</i> (Lam.)Taub (Fabaceae)	Palash (B), Flame of Forest, Bastard Teak	Leaf-paste, crushed seeds, Bark-paste.	In boils, pimples, and in convulsions and skin diseases. Bark powder in menorrhagia and leucorrhoea.

10	<i>Calotropis procera</i> (Aiton) (Asclepiadaceae)	Akanda (B), The apple of Sodom	Roots and flower	In nocturnal enuresis.
11	<i>Cannabis sativa</i> (Linn.) (Cannabinaceae)	Ganja(B), Cannabis, Indian hemp.	Ash of burnt leaves.	In pyorrhoea.
12	<i>Carica papaya</i> (Linn.) (Caricaceae)	Pepe (B), Papaya	Fruit, Gum of stem.	As digestive and in cough respectively.
13	<i>Catharanthus roseus</i> (Linn.) G.Don	Nayantara(B), Vinca,	Whole Leaves	White variety in blood sugar and violet variety in asthma.
14	<i>Vinca rosea</i> (Linn.) (Apocynaceae)	Periwinkle		Tonic for good health and in memory disturbances and sedative
15	<i>Centella asiatica</i> (Linn.)Urban (Umbelliferae / Apiaceae)	Thankuni (B), Indian pennywort	Juice of fresh Leaves	In bone fracture
16	<i>Cissus quadrangularis</i> (Linn.) (Vitaceae)	Harjora (B), Bone-setter, Edible stemmed vine	Stem paste	
17	<i>Croton bonplandianum</i> (Euphorbiaceae)	Croton, Bantulsi (B)	Leaf juice, intact leaves	In mild cut as antiseptic, haemostyptic.
18	<i>Cucumis sativus</i> (Linn.) (Cucurbitaceae)	Shasha(B) , Cucumber	Entire fruit	In indigestion.
19	<i>Curcuma amada</i> (Roxb.) (Zingiberaceae)	Amada(B), Mango-ginger	Whole Rhizome	In mild diabetes, Carminative, stomachic, appetizer, expectorant.
20	<i>Dalbergia sisoo</i> (Roxb.) (Fabaceae)	Sisoo	Leaf extract	In gonorrhoea.
21	<i>Dolichos lablab</i> (Linn) (Leguminosae / Fabaceae)	Hyacinth bean, Shim (B), Indian Butter Bean	Crushed Seeds	Nausea,vomiting and abdominal pains.
22	<i>Eugenia jambolana</i> (Lam) Syn: <i>Syzygium cumini</i> (Linn) Skeels (Myrtaceae)	Rose apple, Jum(B), Black Plum	Juice of young leaves.	In dysentery and and diarrhoea. stomachic, carminative, diuretic.
23	<i>Hibiscus esculentus</i> (Linn.) Syn - <i>Abelmoschus esculentus</i> (Linn.) (Malvaceae)	Vendi (B), Lady's finger,	Whole fruit or seeds	In prostate gland secretion & post-coital inflammation due to semen deficiency.
24	<i>Hibiscus rosa-sinesis</i> (Linn.) (Malvaceae)	Jaba (B), China rose, Hibiscus	Juice of leaves	In mild burns and boils.
25	<i>Murraya paniculata</i> Syn- <i>Murraya exotica</i> (Rutaceae)	Kamini(B)	Paste of dried bark	As an antivenom and sex stimulant.
26	<i>Nerium indicum</i> Mill. Syn - <i>Nerium odorum</i> Soland (Apocynaceae)	Karabi(B), Oleander	paste of the root, bark and leaves	As cardiotoxic but very toxic .
27	<i>Ocimum sanctum</i> (Linn.) (Lamiaceae)	Tulsi (B), Holy basil	Leaf-juice, Paste of dried whole plant	In bronchitis, asthma and genito urinary disorders
28	<i>Poinciana pulcherrima</i> (Linn.), <i>Caesalpinia pulcherrima</i> (Linn.) Swartz (Caesalpinaceae)	Barbados Pride, Radhachura (B)	Juice of leaves	In abdominal pain and in oligo or amenorrhoea.
29	<i>Sesamum indicum</i> (Linn.) (Pedaliaceae)	Sesame, Til (B)	Seeds crushed to paste.	In alopecia along with white mustard seeds.
30	<i>Shorea robusta</i> Gaertn.f. (Dipterocarpaceae)	Sal	Bark, leaves and resin	In gonorrhoea.
31	<i>Tamarindus indica</i> (Linn.) (Caesalpinaceae)	Tentul(B) , Tamarind	Seed paste, Fruits	In diarrhoea and dysentery, in opium and thevetia fruit poisoning.
32	<i>Tagetes erecta</i> (Linn.) (Asteraceae.)	Ganda(B) , Marigold	Juice of leaves.	To arrest bleeding.
33	<i>Tectona grandis</i> (Linn.) (Verbenaceae)	Sehgun (B), Teak	Oil of seeds	To promote hair growth along with coconut oil.
34	<i>Terminalia arjuna</i> (Roxb. Ex De Wight & Arn) (Combretaceae)	Arjuna	Boiled bark extract	In chest pain, liver disorder.
35	<i>Ziziphus jujube</i> (Linn.)Gaertn. non Mill, <i>Ziziphus mauritiana</i> (Lam) (Rhamnaceae)	Kul (B), Common Jujube	Leaf extract	As astringent, anthelmintic.
36	<i>Asparagus racemosus</i> Willd. (Liliaceae)	Shatamuli (B), Shatavari	Root paste	In scalding of urine, cough, abortion, bronchitis and tuberculosis.

Table 2: List of plants lacking proper cross-references but are reported for use

S. No.	Scientific name & Family	Parts used and uses
1	<i>Aristolachia indica</i> (Linn.) Aristolachiaceae	Root and bark juice in snake bite.
2	<i>Azadirachta indica</i> A. Juss. Meliaceae	Stem extract as post-menstrual contraceptive
3	<i>Bombax ceiba</i> (Linn.) Bombacaceae	Fruit paste is applied on body in pox
4	<i>Calotropis gigantean</i> (Linn.)W.L Aiton Asclepiadaceae	Root extract in leucorrhoea.
5	<i>Carica papaya</i> (Linn.) Caricaceae	Ripe seeds in oligomenorrhoea or premature menopause, unripe gum of papaya in fungal infection and non-macerating eczema.
6	<i>Cynodon dactylon</i> (Linn.)Pers. Poaceae	Whole plant juice in curing haematuria
7	<i>Madhuca longifolia</i> (Koenig)Macbride Sapotaceae	Seed oil in skin diseases
8	<i>Mimosa pudica</i> (Linn.) Mimosaceae	Root juice in infertility
9	<i>Moringa oleifera</i> (Lam.) Moringaceae	Bark paste on sores as anti-inflammatory
10	<i>Nyctanthes arbortristis</i> (Linn.) Oleaceae	Juice of leaf in fever
11	<i>Uraria picta</i> Fabaceae	Leaf paste as anti-venom to snake bite

Information gathered in this study was cross-checked and reviewed with previously documented literatures with an aim to explore newer applications. The study revealed newer possibilities of utilizing medicinal plants in various indications while applications of some plants were in accordance with the study published in various literatures. For example, the application of *Adhatoda vasica* in cough, cold and asthma [4,5,6], *Aegle marmelos* in digestive disorders [7,8], antimicrobial effects of *Annona squamosa* leaves in cuts and wounds [9,10] and the abortifacient activity of their seeds [11], *Asteracantha longifolia* in anaemia [12], antitussive action of *Asparagus racemosus* [13], *Butea monosperma* in convulsions [14,15] in gynaecological disorder [16] and anti-microbial activities [17], *Azadirachta indica* in fever, inflammation [1,18], *Dalbergia sissoo* in gonorrhoea [19,20] *Moringa oleifera* in inflammation [21].

Some major findings of the study are the use of the leaves of *Centella asiatica* in memory disturbances, the bark paste of *Murraya paniculata* as antivenom and the roots and flowers of *Calotropis procera* for nocturnal enuresis, seeds of *Annona squamosa* to destroy lice and as an abortifacient. Based on this ethnobotanical study further scientific assessment of these medicines is to be done which may provide a lead in drug development. A detailed knowledge of the pharmacological effect of herbal drugs is necessary for effective therapy of diseases.

The local persons have profound knowledge about the medicinal plant wealth available within the community. Most of the plants gathered have been reported in the global literature as being used for various ailments and diseases which indicates the scientific basis and reliability of these rural people possessing indigenous knowledge of traditional medicines. Although some professional practitioners are available within the locality most of the persons rely on self-prescription and age-old knowledge among family members and others for common ailments like cough and cold, fever, some skin infections etc. The people of the community are aware regarding the efficacies and benefits of herbal medicines compared to the allopathic medicines available in the nearby markets and usually rely on it for the primary health care. The high expenses of the allopathic medicine, non-availability in the required time alongside the side-effects the reasons for dependence of people on the traditional herbal medicines which are also comparatively easily available.

One of the major concerns regarding the use of herbal medicines is their safe usage. The treatment being carried practitioners, who are not medically qualified and the lack of proper standards of the medicaments often causes adverse effects and could not provide effective therapy. Herbal medicines have been found to be contaminated with heavy metals like Arsenic, lead and mercury leading to various health hazards [23]. Thus to ensure the safe and efficacious use of traditional herbal medicines, the issues regarding quality standards of herbal formulations and safety must be addressed. The proper pharmacological activity of the medicinal plants needs to be substantiated through extensive and elaborate experimental studies to ensure the safe, efficacious and rational utilization of plants.

The present study also highlights about the exploitation of the endangered medicinal plants by the local residents who are unaware of their importance in the ecosystem. For example *Asparagus racemosus* is an endangered plant species [13]. In view of this, there is a great and urgent necessity to educate the local population and healers to adopt conservation measures as necessary, so that over-collection of such species will not lead to their extinction in their territory, which signifies the loss of their source medicinal material.

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