

ETHNO-MEDICOBOTANY OF SOME TRIBAL COMMUNITIES OF BANKURA DISTRICT, WEST BENGAL, INDIA

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ABSTRACT: Investigation and documentation of the status of medicinal plants and associated knowledge was conducted in Taldangra block situated at south-western part of Bankura district. Data was collected and evaluated with a questionnaire survey, semi-structured interviews, field observations and vegetation surveys. 16 medicinal plant species used to treat 40 different ailments were recorded. Leaves are the most commonly collected plant parts for medicinal purposes. Much of the ethno-medicinal knowledge is concentrated in elderly members of the community. The medicinal plants are facing threats from agricultural expansion, wood extraction and overgrazing as informed by the local authorities. Consequently, medicinal plant resources are declining with time. The study aims to assess the contribution of nonconventional medicinal plants towards community health care. A total of 62 knowledge holders from the tribal community were interviewed and medicinal uses for 16 plants were recorded. The study illustrates that medicinal plant diversity is important for community health care, which in turn, ensures conservation, awareness creation towards sustainable utilization and management of these medicinal plants diversity.

Key words: Ethno-medicobotany, Taldangra block, Bankura district, West Bengal.

INTRODUCTION

Medicinal plants have been used as sources of medicine in many indigenous communities throughout the world (Bodding 1925, Schultes 1962, Pal and Jain 1998). Herbal medicines serve the health needs of about 80% of the world's population, especially for millions of people in the rural areas of developing countries (Schultes 1962). India has a rich source of medicinal plants distributed in

different geographical conditions and the large sections of Indian population still rely on traditional plant medicines as they are abundantly available, economical, and have little or no side-effects in addition to their cultural acceptability (Pal and Shukla 2003, Dubey *et al.*, 2004). Food, shelter, clothing and medicine are the indispensable basic needs of any human being. All are derived from earth's biodiversity either directly or indirectly.

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Humans use various forms of knowledge to harvest biodiversity of which traditional knowledge is the most basic and widely employed form. This specialized knowledge has helped human beings to survive and propagate since their origin on earth. For health care needs, humans are known to exploit local as well as remote biodiversity for therapeutic purposes. The wide spread use of traditional medicine could be attributed to cultural acceptability, perceived efficacy against certain types of diseases, physical accessibility and affordability as compared to modern medicine. In recent years, efforts were made to document the associated knowledge base and conserve medicinal plants in the country. Medicinal plants and the associated knowledge are being threatened by ongoing deforestation, environmental degradation and modernization (Ghosh 2008, Ghosh *et al.*, 2013). All this necessitates the need to investigate the status of medicinal plant resources and knowledge base associated with it for successful resource conservation and development. District Bankura of West Bengal state, India, is floristically rich and diverse (Sanyal 1973, 1974 and 1994). Tribal communities living in and around the forest areas are largely dependent on the forest resources for food, fodder and medicinal purposes (Basak 1997, 2006, Namhata and Mukherjee 1992). However, the reports regarding ethnomedicinal plants of the district are in scattered form and restricted in a few particular localities. The ethnomedicinal reports on plants of Panchet Soil Conservation Division of the district are almost absent. The present study was, therefore, initiated in Taldangra block under Panchet Soil Conservation Division of Bankura district, West Bengal, India to document the ethnomedicinal knowledge of the region and in a context where

medicinal plants are not getting proper importance in the research and development strategies. In these context, the objective of the present study was to identify the plants being used for medicinal purposes by the tribal communities in order to better characterize their pharmacopoeia and for better understanding of these tribal knowledge towards health care system for treating different diseases which in turns ensures conservation of these medicinal plants diversity as well as to provide the basis for bio-prospecting of these promising medicinal plants.

MATERIALS AND METHODS

The different communities

This study surveyed the different community like Lodha, Munda, Kharia, Orao, Santhal communities of 15 villages in Taldangra Block, Bankura District, West Bengal, India. The traditional occupation of these tribals is farming, hunting, animal husbandry, stitching of leaf of “Sal” (*Shorea robusta*) to prepare “Thala”.

Study area

This study was conducted in Taldangra Block, located in the dry lateritic zone of Bankura district in West Bengal (Map 1). The western part of the district has poor, ferruginous soil and hard beds of laterite with scrub jungles and sal (*Shorea robusta*) woods. Long broken ridges with irregular patches of more recent alluvium have marks of seasonal cultivation. Taldangra is located at 23°01'N 87°07'E occupying an area of about 349.70 km² and includes 9 Gram panchayats, *viz.* Amdangra, Bibarda, Fulmati, Harmasra, Khalagram, Panchmura, Saltora, Satmouli and Taldangra. The total

average rainfall is 1,400 millimetres (55^{"/}), the bulk of the rain coming in the months of June to September. Winters are pleasant with temperatures dropping down to below 17° C (81° F) in December (<http://en.wikipedia.org/wiki/Taldangra>).

The socio-economic status of those tribal peoples is poor and most of the household reported that their daily income is below the poverty level, which has been defined by the Government of India (<http://planningcommission.nic.in/reports/sereport/ser/ser>). Housing and conditions of living were in a primitive state with poor hygienic conditions and lack of proper sanitation facilities (<http://bankura.org.in/site/Economy.htm>).

Sampling

The survey was conducted between September, 2013 and February, 2014 at 15 villages. A number of visits (8, each visit lasting 2-7 days) were made to the tribal peoples as well as Gunin (tribal medicinal practitioner) (Fig. 1. A, B) to build up rapport with the Headman, adult's members and healers.

This study's sample, includes 62 old aged (41 men and 21 women) person who were enriched with use of medicinal plants from their family source. The informants were chosen by taking 3-5 individuals from each 15 villages under study. Knowledge holders ranged from 60-93 years in age. Informal discussions were arranged to cross- check/ verify the information provided by the respondents to get more accuracy. Frequent field trips with informants enhanced understanding of indigenous identification, collection and use of medicinal plants in and around the studied villages under the Block.

Data collection

Data collection was made following standard methods of Martin (1995). Prior Informed verbal consent was obtained from the informants of the community to interview them. The healer was further queried with the help of the semi-structured questionnaire (Case 1990) as to plants used, disease(s) treated, mode of collection and utilization of plants parts, conservation strategies, formulations, mode of administration, and any precautions which needed to be followed during medication period together with any other details which the healer wanted to provide.

It was observed that all plants used by the healers were collected from Taldangra forest or from adjoining areas free of cost. Most plants were perennial, *i.e.* available throughout the year. If any plant part was not available (*e.g.* fruits) throughout the year, the healer used dried plant parts as in the cases of fruits of amlaki (*Embllica officinalis*) and banlebu (*Glycosmis pentaphylla*). Pianz (*Allium cepa* another plant used by the healer is also an annual plant, but bulbs of this plant (Pianz) were used, which were available throughout the year. However, if any plant or plant part necessary for a formulation was not found, the healer did not treat the disease by incomplete formulation.

Traditional healers who prepare remedies also serve as diagnosticians, identifying causes of illness before prescribing treatment. The dose given to the patient depends on age, physical status and health conditions of the patient. The method of use of plants varies according to nature of disease. In the majority of the cases, a decoction of various parts of plants is administered for treating a disease or diseases. Most of the decoctions are made just by crushing the plant parts, decanting of the liquid and drinking after cooling. Paste of some plants

bark is plastered to set dislocated or fractured bones (e.g. *Phyla nodiflora*, Table-1, Fig.2D.)

Ethnobotanical surveys of local knowledge can be used as a tool for investigating human perceptions of biodiversity loss (change in use of plant species through time) (Nanyunja 2003). From that point of view, this study has emphasized on the indigenous knowledge of the local people to investigate the conservation status of medicinal plants and the possible causes of these changes.

Plant specimens were photographed and collected on the spot. They were then pressed, dried and brought back to Calcutta University Herbarium. Sample specimens of all medicinal plants were collected and tagged using local names provided by the village's knowledge holders. Specimens were deposited in the Calcutta University Herbarium (CUH) and identified using relevant literatures (Sanyal 1994, Annon 1997). The observation on particular plant species, used to treat other different ailments, reported by earlier workers, has also been incorporated in the study for better understanding of the medicinal properties of the taxon under study.

Preference ranking

Preference ranking was also conducted to determine the relative importance of 4 commonly reported medicinal plants used in the treatment of wound, a common ailment of the study area. In this method eight informants were given specimens of the medicinal plants and ask to arrange them based on their personal preference of efficacy. The plant mostly effective was given the highest score (8), while (1) represent least effectiveness.

RESULTS AND DISCUSSION

Ethnobotanical uses

The flora of the study area provides useful species of ethnobotanical importance in general and ethnomedicine in particular. The study documented 16 medicinal plant species belonging to 15 families. They include six herbs, three trees, three shrubs and three climbers showed that the herbs constituted the highest proportion. Informants used different plants parts for preparation of traditional drugs (e.g. leaves, roots, seeds, barks, and fruits). In the study area that more species were utilized for their leaves, followed by root, stem and bark. People of the study area mostly administer traditional medicine orally, followed by dermal administration. Most plants were used to treat many diseases, however there is variation in the doses and mode of preparation and administration of medicine for better efficacy.

Scientific names of medicinal plants used to treat different diseases, their habit, growing locality, vernacular name, plant parts used and including the number of remedies are provided in Table 1.

Favourite species of the local respondents were also reported on the basis of the number of citations during interview which reflects *Emblia officinalis* Gaertn. was cited by 21 informants (33%); *Hemidesmus indicus* (L.) R.Br. ex Schult. was the second (19 informants, 30%), *Piper longum* L. & Perr. (13 informants, 20%) ranked third and *Achyranthes aspera* L. and *Cynodon dactylon* (L.) Pers. (11 informants, 17% each) together occupy fourth followed by *Terminalia bellirica* (7 informants, 14%). Eight informants selected among the key informants on the basis of the wealth of indigenous knowledge provided their preference ranking of 4 medicinal plants that

are reported to be effective against wound (Table 2). It was evident from the data that most of the informants firstly prefer *Acyranthes aspera* against wound followed by *Phyllanthus nodiflora*, *Allium cepa* and *Streblus asper* respectively.

Diseases treated with medicinal plants, preparation methods and dosing

***Achyranthes aspera*(Fig.1.A):** For worm, the roots are ground into powder and 5 gms of powder is used in 1 cup of water and take one cupful in the morning for 7 days.

In case of burn injury 100 gms of dried leaf powder is mixed with 2 spoonful of mustard oil and applied externally to treat boils and wounds.

For fatal placenta retention, one mature leaves is fried with 10ml of ghee and take in every after 3 hours and continued for 3 days.

Root is used in case of sprained and strained muscle and to cure piles and haemorrhoids (Pattanayak 2012). Plant is used in leprosy (Gupta *et al.*, 2010). Seeds are used as emetic in hydrophobia (Chopra *et al.*, 1956). Lodhas used this plant to cure piles and for the treatment against burning sensation in urination as well as to stop bleeding after abortion (Pal and Jain 1998).

***Allium cepa*(Fig.1.B):** Juice of fresh leaves is mixed with 3-4 drops of mustard oil and applied externally on the infected portion to treat boils and wounds and applied 20 ml in each times and 3 times daily for 7 days.

For diarrhea 5 bulbs milled and mixed with 2 gms of salt and sugar. Then the mixture is dissolved in 500 ml of water and drunk ½ glassful each for 3 days.

Bulb of this plant is used to promote bile production, reduce blood sugar and also used as stimulant, diuretic, expectorant and in

flatulence and dysentery. Plant juice is moderately bactericidal (Chopra *et al.*, 1956). Paste of bulb mixed with curd and salt is used in diarrhoea and dysentery. Aqueous extract of the bulb lowered the blood sugar as well as serum cholesterol and serum urea levels in alloxan diabetic albino rats (Annon 2004).

***Asparagus racemosus*(Fig.1.C):** 1 gm dry powder of leaves mixed with 1 gm salt, 1 spoonful ghee and 1 cupful of water to make tea and take 1cupfull in every morning for 5 days to treat hypertension, high blood pressure.

100 gms powder of dried roots is mixed with 1 spoonful of sugar and 200 ml water added and boiled for a few minutes. After cooling, juice is drunk to treat headache, 20 ml in each time, thrice time in a day for 3 days.

Root is used as refrigerant, diuretic, antiseptic, antidiarrheal, antidysentric agent (Chopra *et al.*, 1956, Basak 1997). Pal and Jain (1998) reported the use of root in case of sunstroke, dysentery and constitutional disorders by the tribal communities like Lodhas, Santhals, etc. Bulbs are eaten as raw food especially in summer to prevent sunstroke (Ghosh 2003). Plant is used as demulcent, diuretic, aphrodisiac and galactagogue. The plant is also used as immune-modulator. Root of this plant exhibits inhibitory effects on the digestive enzymes (Annon 2004). Roots are applied in urinary disease, dysentery, gonorrhoea and leucoderma (Hailemariam *et al.*, 2009). Plant is used in blood dysentery, phylaria and nyctapols (Ghosh *et al.*, 2014) and in cough, abortion, bronchitis and tuberculosis (Ghosh *et al.*, 2013).

***Coccinia grandis*(Fig.1.D):** For snake bite, 5 gms of leaves are pasted and dilute up to 500 ml and taken orally to neutralize venom.

For insect bite 2 gms of leaves are mixed with 1gm of camphor powder and applied it to

that part 3 times in a day for 3 days.

For stomach pain 500 gms powder of dried leaves is mixed with 5 of sugar and 1 spoonful of salt and 500 ml of water added, boiled and cooled and take 50ml thrice in a day and continued for 5 days.

For diarrhoea, fresh leaves are milled with rasun (*Allium sativum*) to make a chatni. 20 leaves extract are mixed with 5gms salt and drunk 3ml each with one glassful of water 3 times in a day for 3 days.

Plant is used internally in gonorrhoea. Leaves and root are used in diabetes. Leaves applied externally in case of skin diseases. Fruits used to reduce blood sugar (Chopra *et al.*, 1956, Annon 2004). Root of the plant is used to cure leucorrhoea (Nawaz *et al.*, 2009). Fresh leaves are used to cure skin diseases like curbanle, scabies, ulcer, abscess, septicemic wounds, etc. (Pattanayak *et al.*, 2012). Root extracted is used as digestive and carminative agent. Leaf extraction applied in ophthalmia and gonorrhoea (Sinhbabu and Banerjee 2013).

***Cynodon dactylon*(Fig.1.E)** : Juice of fresh leaves is drunk 6-7 drops, thrice in a day and continued for 3 days for fever.

Young stem paste is rubbed on the forehead to treat headache.

For ear pain, 10 gms of young stem and leaves are milled and filtered and applied one drops daily before sleeping.

For epilepsy, young stem paste is mixed with 2 gms of ghee and 1gm of camphor and takes it for 3 months daily.

Root of this plant is used as diuretic, to stop bleeding. Juice of plant is used as astringent; and also used in dropsy and anasarca, in hysteria, epilepsy, insanity, genito-urinary disorders (Annon 1950, Chopra *et al.*, 1956, Basak 1997). Plant is used in wound healing purposes and to cure haematuria (Mollik *et al.*,

2010, Pattanayak *et al.*, 2012). Plant is applied in herbal therapy for urinary ailments (Acharya and Mukherjee 2010). Fresh shoots are eaten to treat habitual abortion (Ghosh 2003).

***Elephantopus scaber* (Fig.1.F)**: Roots were paste and then make a pill of 1mm diameter and filled it into the teeth cavity to reduce tooth pain and remove it after taking each meal and replaced it 3-4 times in a day and continued for 3 days.

In case of gum infection 2.5 gms of roots and dried matured leaves were pasted with 1 gm of camphor powder and applied it throughout the infected portion of the gum 3times in a day and continued for 1-2 weeks.

The whole plant is used to stimulate diuresis, reduce fever and to eliminated bladder stone, peptic ulcers and also used in piles and scabies as well as used as vermifuge for infants (Annon 2005). Plant is used as astringent, cardiac tonic, febrifuge in snake bite. Roots and leaves used in dysuria, diarrhoea, dysentery, swellings or pain in stomach, to arrest vomiting. Root powder with pepper is applied to toothache. Leaves used in ulcer and eczema (Chopra *et al.* 1956). Plant extract is antidiabetic (Basak 1997). Root extract is given to children to treat fever due to measles and for stopping vomiting in general. Root also used in the treatment of treatment of gonorrhoea. The plant is with diuretic and febrifuge properties (Pal and Jain 1998).

***Emblica officinalis*(Fig.1.G)**: 10 gms of leaves are mixed in 100 ml of coconut hair oil and boiled for 5 minutes and after cooling applied at the roots of hair every day and continued for 1 month to treat hair fall.

For leucorrhoea 500gms of dried fruits powder are mixed with 5 gms of salt and 5gms of sugar and made into a juice to drink one glassful in three times in a day for 2 weeks.

Flowers and fruits are used as cooling agent, refrigerant, diuretic and laxative agent. Dried fruits are useful in diarrhoea and dysentery. Root and stem bark is astringent. Seeds are used in asthma, bronchitis and biliousness (Chopra *et al.*, 1956). Fresh leaf juice is used for improving weak eye sight. Fruits used in diarrhoea and also used against gripe, as well as cooling agent and laxative. Seeds are used in the treatment of eye inflammation. Fresh fruits and root paste are used to cure jaundice (Pal and Jain 1998). Fruits are used to facilitate learning and memory and to increase haemoglobin and has hepato tonic, aphrodisiac, retentive and diuretic action. Plant acts as weight reduction and glandular swelling management (Annon 2005).

***Glycosmis pentaphylla* (Fig.2.A):** For leech infestation 10 gms of dried fruit milled and made into a powder to apply 3 times into a day at the infected part.

For Carbuncles 5 gms of dried fruits are ground and mixed with 1gm of salt and made into a paste and applied 3 times daily for 1 week.

To treat measles 500ml decoction of dried leaves is mixed with 2-3 spoonful of honey and applied it throughout the body 20ml each in a day and continued for 7 days.

Roots used in low fever. Wood used in snake bite (Chopra *et al.*, 1956, Basak 1997). The plant is used in convulsions and fever. It also relieves pain of cancer of throat and buccal cavity (Annon 2005).

***Hemidesmus indicus* (Fig.2.B):** 100 gms powder of dried leaves is mixed with 200ml water and boiled for a few minutes. After cooling and sieving it used to splash the infected eyes to treat eye infection.

For pox 500gms powder of dried leaves and barks were mixed with 2 liters of water and boiled, and then after cooling used to bath.

100 gm powder of dried leaves is mixed with one spoonful of sugar and 200ml water added and boiled for 5 few minutes. After cooling, juice is drunk to treat stomach and abdominal pain.

Roots used as substitute for sarsaparilla, demulc., diaphor., diuretic, in loss of appetite, skin disease. Roots are also used as blood purifier and in snake bite (Chopra, *et al.*, 1956). Plant is used as tonic as well as against scorpion-bite (Basak 1997). Root paste is used in the treatment of leucoderma. Root paste is used to cure eruption of tongue of children as well as for treatment of tonsil. Root juice is used to stop bleeding and wounds healing. Root decoction with honey is used to cure abdominal tumors (Pal and Jain 1998). Roots are used in the treatment of gonorrhoea, leucoderma, bleeding piles, jaundice and dysentery (Annon 2005). Plant is used in case of miliary rubra (Ghosh 2008). Plant is applied as diuretic and also in urinary disease, bronchial trouble, etc. (Ghosh *et al.*, 2014).

***Mimosa pudica* (Fig.2.C):** 10 gms of leaves are mixed with one spoonful of sugar and one glassful of water and resulted juice taken 3 teaspoonful every morning for 2 weeks to treat leucorrhoea.

For dandruff, 5 gms of fruits are boiled with 100ml of coconut hair oil and heated for 5 minutes and after cooling applied at scalp 10ml each day before sleeping.

Decoction of roots is useful in gravelly complaints. Leaves and roots are used in piles and fistula. Leaves are rubbed into a paste applied to hydrocele (Chopra *et al.*, 1956). Leaves are used to treat glandular swelling and in dressings for sinus and also an application for sores and piles (Annon 1962). Leaf decoction is used as depurative. Root paste with black peppers used on rachitic (inflammation

of testis) (Paul and Jain 1998). Decoction of root is useful in gravel and other urinary complaints. Plant is applied in urinary trouble, sinus and piles (Ghosh *et al.*, 2014). Plant, particularly root is used against infertility (Ghosh 2008, Ghosh *et al.*, 2013).

***Phyla nodiflora*(Fig.2.D):** For headache and andkapali ($1/2$ forehead pain) 10 young stem are mixed with 5 tendril of *Lagenaria siceraria* (Molina) Standl., 2gms of atapchal (sunned rice) and 2 gms of old ghee and applied it to the full and half forehead.

For broken legs/hands 5gms of leaves and young stem are pasted and plaster on fractured part and covered for 28-35 days.

For wounds 5 gms of leaves and flower pasted with 1 gm of chandan (*Santalum album* L.) powder and applied it to the infected portion 3 times in a day and continued it for 7 days.

In case of gastritis, 5 gms of leaves and young stem are milled, steeped in 250 ml of water over night, then filter and drunk one glassful in every morning and continued for 2 weeks.

In constipation, 100gms powder of dried leaves is mixed with one spoonful of sugar and 200 ml water and boiled for a few minutes. After cooling, juice is drunk after each meal 3 times in a day and continued for a month.

Plant is used as febrifuge diuretic, maturants for boils. Leaves and tender stalks are given to children in indigestion and to women after delivery (Chopra *et al.* 1956). Plant has diuretic and febrifuge properties. It also used in bowels and pain in knee joints. Plant paste is also applied in boils, swollen cervical glands, erysipelas and chronic indolent ulcers (Annon 1962). Leaves are used to cure nocturnal pollution and for treatment of orchitis (Paul and Jain 1998).

***Piper longum*(Fig.2.E):** For cold and cough, 100 ml decoction of inflorescence juice is

mixed with one spoonful of sugar and 1 gm of ghee and eaten daily morning for 7 days.

For leucorrhoea 10gms of fresh leaves and equal amount of inflorescence are mixed with one glassful of water and taken 5 ml each 3 times daily for 7 days.

Dried unripe fruits are alternative and tonic. Decoction of immature fruits and roots are used in chronic bronchitis, cough and cold. Roots and fruits are used antidote to snake bite and scorpion sting (Chopra *et al.* 1956). Fruits and roots are used for cough, bronchitis and asthma. Plant is applied in case of cholagogue in obstruction of bile duct and gall bladder, as an emmenagogue and abortifacient. It also used against drowsiness and internally as carminative (Annon 1969). Roots of this plant are used in abortion and leucoderma. Fruit decoction is used for treatment of cold and cough (Paul and Jain 1998).

***Sida rhombifolia*(Fig.2.F):** 10 gms of fresh leaves are mixed with 5 gms of sugarcandy and 200 ml of water and 20 ml of this juice is taken in every morning for 7 days to treat against white discharging during urination.

Plant is used in pulmonary tuberculosis. Leaves are applied on swelling. Stem are used as demulc and emol. Roots are considered valuable in rheumatism (Chopra 1956, Basak 1997). Stem bark paste is applied to cure piles. Root bark paste is used for expediting child birth. Root paste is used for the treatment of rheumatism. Dried seed powder is used to cure ulcers (Paul and Jain 1998). Plant is useful in tuberculosis and rheumatism. Leaves are used in skin disease and as a diuretic and febrifuge. Roots are used in the treatment of leucoderma (Annon 1972).

***Streblus asper*(Fig.2.G):** 100 ml decoction of dried leaves is mixed with $1/2$ spoonful of salt and a few drops of this are applied in the infected

Table 1: Information of ethnomedicinal plants.

Scientific name and family	Vernacular name	Habit	Source/Locality	Parts used	Voucher Number	Diseases treated
<i>Achyranthes aspera</i> L. [Amaranthaceae]	Chirchini	H	Taldangra	R, L	Mandal 57	Worm, retained fatal placenta retention, burn injury, wounds.
<i>Allium cepa</i> L. [Amaryllidaceae]	Pianz	H	Taldangra	L, B1	Mandal 42	Inflammatory wounds, burn injury, diarrhoea
<i>Asparagus racemosus</i> Willd [Liliaceae]	Satamuli	SH	Taldiha	R, L	Mandal 16	Hypertension, high blood pressure, migraine pain
<i>Cocciniagrandsis</i> (L.) Voigt [Cucurbitaceae]	Telacochu	C	Valuka	L	Mandal 23	Snake bite, insecticide, stomach pain/ diarrhoea
<i>Cynodon dactylon</i> (L.) Pers. [Poaceae]	Durba	H	Taldangra	St, L	Mandal 22	Headache, epilepsy, ear pain
<i>Elephantopus scaber</i> L. [Asteraceae]	Bhui papri	H	Laltyagura	R, L	Mandal 21	Teeth cavity infection, gum infection
<i>Emblica officinalis</i> Gaertn. [Euphorbiaceae]	Amlaki	T	Saralia	L, F	Mandal 17	Leucorrhoea, hair fall
<i>Glycosmis pentaphylla</i> Retz.) DC. [Rutaceae]	(Banlebu	H	Baramesha	L, F	Mandal 051	Carbuncles, leech infestation, tonsillitis
<i>Hemidesmus indicus</i> (L.) R.Br. ex Schult. [Apocynaceae]	Arantamul	C	Saralia	L, B	Mandal 05	Eye infection, pox, stomach pain, abdominal problems
<i>Mimosa pudica</i> L. [Fabaceae]	Lajjabati	H	Laltyagura	L, F	Mandal 049	Leucorrhoea, dandruff

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<i>Phyla nodiflora</i> (L.) Greene. [Verbinaceae]	Bhui okra	H	Tilaghagrj	L, Y s and F1	Mandal 27	Migraine, broken body/hand, wounds, gastritis/constipation
<i>Piper longum</i> L. [Pipereceae]	Pipul	C	Pakurdiha	I, L	Mandal 025	Irritation during urination, cold and cough
<i>Sida rhombifolia</i> L. [Malvaceae]	Shetbaral	SH	Taldangra	L	Mandal 37	White discharge during urination
<i>Streblus asper</i> Lour. [Moraceae]	Sheora	SH	Pakurdiha	L, B	Mandal 14	Scorpion bite, wounds
<i>Terminalia bellirica</i> (Gaertn.) Roxb. [Combretaceae]	Bairah	T	Telarbandhi	B, S	Mandal 61	Insecticide, snake bite/ mouse, elephantiasis
<i>Wrightia antidysenterica</i> (L.) R.Br. (= <i>Holarrhena antidysenterica</i> (L.) Wall.) [Apocynaceae]	Kurchi	T	Dhabani	L	Mandal 31	Concentrated cloudy urination

Habit: T= tree, Sh= shrub, H= herb, C= climber. Parts used: R= root, L=Leaves B= bark, Bl= Bulb, Yt= young twig. S= Seeds, R= Roots, I= Inflorescence, Fl= Flower, F= fruit, Rh= Rhizome

Table 2: Preference ranking by 8 respondents of medicinal plants used for treating wound in Taldangra block, Bankura district, West Bengal.

Plant species	Respondents								Total	Rank
	R1	R2	R3	R4	R5	R6	R7	R8		
<i>Achyranthes aspera</i> L.	8	7	7	8	7	8	8	8	61	1 st
<i>Phyla nodiflora</i> (L.).	8	6	6	5	7	5	6	5	38	2 nd
<i>Allium cepa</i> L.	4	1	5	4	2	6	4	5	31	3 rd
<i>Streblus asper</i> Lour.	5	3	2	2	1	2	3	4	22	4 th

Fig.1.

A. *Achyranthes aspera* , **B.** *Allium cepa*, **C.** *Asparagus racemosus*, **D.** *Coccinia grandis*, **E.** *Cynodon dactylon*; **F.** *Elephantopus scaber*, **G.** *Emblica officinalis*.



Fig.1. Mandal et al. :Ethno-...India.

Fig.2



A - *Glycosmis pentaphylla*



B. *Hemidesmus indicus*



C. *Mimosa pudica*



D. *Phyla nodiflora*



E. *Piper longum*



F. *Sida rhombifolia*



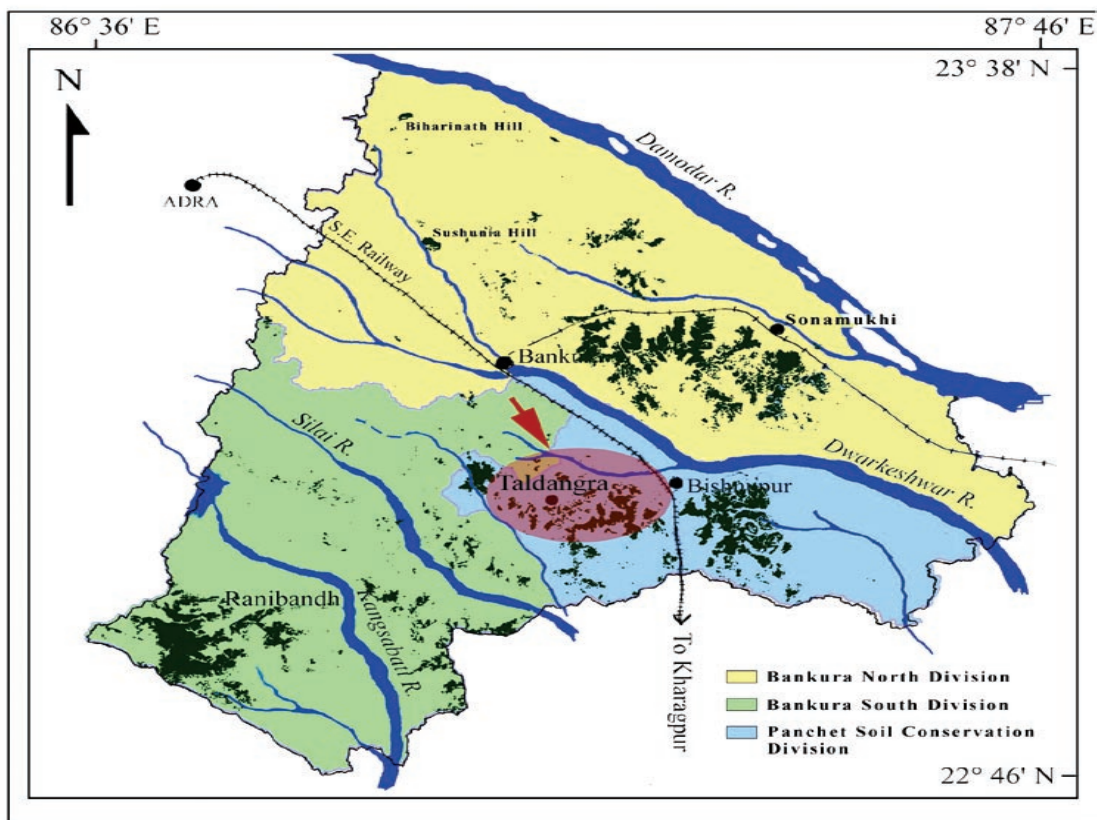
G. *Streblus asper*



H. *Terminalia bellirica*



I. *Wrightia antidysenterica*



Map 1: Study site - Taldangra Block

portion. Bark is milled and made into a paste and applied to the infected portion against scorpion bite and any type of wounds.

Root is applied in unhealthy ulcers and sinuses and also used as antidote to snake bite. Latex of plant is antiseptic, astringent and applied to chapped hands and sore heels. Decoction of bark is given in fever, dysentery and diarrhea (Chpora *et al.*, 1956). Poultice of roots is applied to ulcers, sinuses, inflamed swellings and boils. The twigs are chewed to make brushes for cleaning teeth and to cure pyorrhea. Leaves are used as galactagogue. Decoction of roots and bark is used I fever and

diarrhea (Annon 1976). Stem bark paste is applied for the treatment of elephantiasis. Latex is used for treatment of leucoderma as well as applied on boils for suppuration. Root bark paste is used for diarrhea (Paul and Jain 1998).

***Terminalia bellirica* (Fig.2.H):** For insecticide, scorpion sting of seed is pasted and applied to that biting zone for 3 times in a day and continued it for 7 days.

In case of anti-snake 5 gms of seed paste is taken orally for neutralization of snake venom.

As anti-mouse seed paste is prepared and applied to the affected part.

For elephantiasis bark is milled and made

into a paste and used on swelling for 3-4 times and continued for a month.

Fruits are used as astringent, tonic, laxative, antipyretic as well as applied in piles, dropsy, diarrhoea, leprosy and headache. Seed is narcotic (Chpora *et. al.*, 1956). Seed kernels possess narcotic properties. Leaves are applied in the treatment of dyspepsia, dropsy, piles, diarrhoea and leprosy. Ripe fruits are used as an astringent. Gum is demulcent and purgative (Annon 1976). Stem bark paste is applied for leucoderma and for general debility. Fruit pulp paste is used for leprotic wounds. Gum is used as cooling agent (Paul and Jain 1998). Oil extracted from seeds is applied in skin disease. Seed oil is useful to treat leucoderma and grayness of hair (Sinhababu and Banerjee 2013).

Wrightia antidysenterica

(=*Holarrhena antidysenterica*) (Fig.2.I): For cloudy urination 100 gms of powdered dried leaves is mixed with 25gms of sugarcandy and 500 ml of water filtrate of overnight soaked 25 gms mouri (*Foeniculum vulgare*). 50 ml of this mixture is taken every morning for 2 weeks.

Bark is used in dysentery. Seeds are astringent, febrifuge used in fever, dysentery, diarrhoea, and intestinal worms (Chpora *et. al.* 1956, Basak 1997, Ghosh *et al.* 2014). Bark of this species has astringent, antidysenteric, anthelmintic, stomachic, febrifugal and tonic properties and is used in piles, colic, dyspepsia, chest affection, toothache and diuresis as well as in skin and spleen disease. Plant is used in the treatment of amoebic dysentery and diarrhea (Annon. 1950,1959). Dried root applied to cure bleeding from nose as well as used against

dropsy and gripe of children. Stem bark used in dysentery. Seed is anthelmintic (Paul and Jain 1998).

The medicinal plants reported in this work are very common vegetational elements of the forest (Sanyal 1974,1994). The uses of these medicinal plants against other various ailments are also recorded by earlier workers as mentioned in the text, however, present study discloses the unique mode of medicinal combinations. Mixing of plant parts with the other plant parts (*Allium sativum*, locally known as 'rasun'; tendril of *Lagenaria siceraria*, local name 'lau'; powder of *Santalum album*, locally known as 'Chandan'; *Foeniculum vulgare*, local name 'mouri'), substances such as ghee, mustard oil, coconut oil, white rice (atap chal) sugar, salt, sugarcandy, honey, camphor, used by the traditional healers for increased efficacy.

Peoples of the study area have knowledge, though limited, about the benefit of the conservation. Local healers who make medicine from plant preferred to collect them personally from wild when the patient visit them and accordingly what needed for that particular disease. It was explained by the informants that healers do that in order not to expose it to other members of the community which in turn would reduce their source of income.

Healers as well as local informants have a belief, plant parts must be collected before sunrise and only tuesday, thursday and saturday, in order to ensure efficacy of their medicine. So, these beliefs have some contribution towards conservation as well as systematic collection of these medicinal plants by the expertise prevent over exploitation, which in turns ensures sustainable utilization of this valuable wealth.

One of the most important finding is that

young generation are quite indifferent about this wealth, only the ethnomedicinal knowledge is restricted to the elders of the community. So, it is thus imperative to take necessary action to document the ethnomedicinal recipes before extinction of this knowledge.

Traditional knowledge of plants in many communities is changing because of rapid socio-economic and cultural changes that are taking place (Sinha and Sinha 2001). This is particularly true in these tribal communities (Ghosh 2008, Ghosh *et.al.*, 2013). Various factors that were considered for degradation of these medicinal plants were recorded mainly by discussion with the key informants, knowledgeable elder, and with the local authorities. Major factor reported were deforestation for the purpose of agricultural expansion, followed by overgrazing and collection of plant material for fuel.

In the tribal communities, since most people, particularly in the underdeveloped countries do not go to allopathic doctors for treatment, either because they lack access to modern medical facilities or are too shy to discuss these diseases with unknown doctors (Acharya and Mukherjee 2010). They rely primarily on traditional healers and medicinal plants for treatment of such diseases. It is therefore important to collect information from all parts of the world regarding medicinal plants that are used as treatments for these ailments.

Moreover, almost all uses of the plants or plant parts in different diseases recorded in the present study are new claim. Therefore, present study offers a scope for bioprospecting of these nonconventional medicinal plants for sustainable development of the country as well as to uplift the socio-economic status of the tribal communities of this region.

CONCLUSION

Documentation of this knowledge is valuable both for the community health care and their future generations and for scientific consideration of wider uses of the knowledge. The indigenous knowledge and rights of the tribal communities and local people regarding uses of plants needs is to be secured. Appropriate mechanisms for effective benefits sharing of potential value of this knowledge need to be developed (Schultes 1962).

However, inspiration, if required then campaigning is essential to convey the message regarding the domestication of these species in the kitchen gardens of the villagers which will provide them a non-stop supply line of the medicinal plants. This mode of conservation practice will also save the forest for further extinction.

Thus these plants have a basis to be investigated by modern scientific methods for possible discovery of novel drug. A direct result of the present survey was to provide new information on a number of plant species used to treat against different diseases that can form the basis for further scientific study.

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