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# Ethnobotanical Study of Medicinal Plants in the Dakshin Dinajpur District

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***Abstract***

*An ethnobotanical study was undertaken to collect information from the locals on the use of medicinal plants in Dakshin Dinajpur district of North Bengal during June 2009 to October 2010. The data were collected through repeated interactions and semi-structured interviews based on a standardised questionnaire with the help of elderly people especially. They inherited the knowledge of their practices from their fore parents, relatives or friends. The investigation revealed the medicinal plants of 107 species of 96 genera belonging to 48 families. The investigated plants were mostly used to cure diseases such as diabetes, dysentery, stomach/liver diseases, cold–cough, rheumatism, skin diseases, urinary tract infection etc. Highest number of medicinal plants was found in the Leguminaceae family followed by Acanthaceae, Apiaceae, Apocynaceae, Cucurbitaceae, Euphorbiaceae. The high number of medicinal plants recorded perhaps indicated the rich plant diversity of the study area.*

***Keywords:*** *Ethnobotanical, medicinal plants, semi-structured, tribal*

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## INTRODUCTION

India has one of the oldest, richest and diverse cultural traditions associated with the use of medicinal plants and herbs for human, livestock and plant health. In India, the sacred *Vedas*, which date back between 3500 B.C. and 800 B.C., give many references of medicinal plants. *Ayurveda*, the Indian indigenous system of medicine, dating back to the Vedic ages (1500–800 B.C.), has been an integral part of Indian culture [1]. Nearly 80% of the world population depends upon traditional system of health care. Allopathic drugs have brought a revolution throughout the world but the plant-based medicines have its own unique status [2].

Vast ethnobotanical knowledge has existed in India since the time immemorial. Since the 1950s the study of ethnobotany has been intensified. In India, quite a few important works on ethnobotany have been published from different corners of the country [3–6].

From the very beginning of human evolution, man has turned to plants for all his uses—be it food, clothing or medicines to combat diseases. Hence, the knowledge about the use of medicinal plants dates back to centuries, but unfortunately, most of it has not been recorded. With the beginnings of modern world as we know today, when miracle medicines came to the front, their uses suppressed the use of traditional medicines, which became confined to small ethnic groups, who in turn kept their knowledge secret. However, when understanding dawned on humans that the so called miracle medicines have several side-effects, people turned to the use of plants once again. Hence this is an important area which offers much scope to the researchers and doctors. Knowledge stored in the heads of ethnic people are now being tried to be brought into print and to be corroborated scientifically. Therefore documentation of traditional medicinal knowledge as well as medicinal plants is needed for the future.

## MATERIALS AND METHODS

The study was conducted in 48 randomly selected villages of four blocks of Dakshin

 

Dinajpur district in West Bengal, India. The study area falls within latitude 25°10′5″ N and longitude 89°0′30″ E. It is surrounded by Malda and Uttar Dinajpur districts of West Bengal from the west and by the neighboring country Bangladesh from the north, south, and east.

A detailed ethnobotanical survey was undertaken following the method of Jain and Goel [7] in the selected villages of Dakshin Dinajpur, West Bengal, India during June 2009 to October 2010. While collecting information on ethnomedicinal plants, information have been gathered from the village chiefs, medicine men (*Kabiraj*), and even local men, women and cultivators. The data were collected through repeated interactions, participatory rural appraisal and semi-structured interviews with the help of elder people especially tribals, using a structured questionnaire. According to the interviews from traditional healers and elders living in the selected villages of Dakshin Dinajpur district, the medicinal plants used by tribals were listed with local names, scientific names, family, parts used, mode of preparations and medicinal uses.

The medicinal plants used by the tribals were collected and herbarium specimens were prepared using conventional techniques. The specimens were identified with the help of literature and comparison with authentic specimens at the Central National Herbarium (Cal) and North Bengal University Herbarium. The specimens were deposited to the North Bengal University herbarium for future reference.

## RESULTS

The present investigation has been undertaken to know the traditional knowledge about the uses of medicinal plants, generally predominant in the selected areas of Dakshin Dinajpur district, West Bengal, India. The information on scientific name, local name of the plant, part used to cure and method of dosage has been provided in Table 1. The data on medicinal plants, which were collected from inhabitants in and around the villages in the Dakshin Dinajpur district, were pooled and analyzed. The investigation revealed the medicinal plants of 107 species and 96 genera belonging to 48 families, which are commonly used for various diseases by various tribes (Santhal, Munda, etc.) of the selected area (Figure 1).

According to the information gained from villagers, the medicinal plants used by them for the remedy of kidney and other urinary problems were *Kalanchoe pinnata, Tribulus terrestris, Saraca indica, Abroma augusta.* Jaundice was treated with plants such as, *Achyranthes aspera, Andrographis paniculata, Swertia chirata, Cajanus indicus, Saccharum officinarum, Piper betle* etc (Table 1).

For the treatment of dysentry the plants used by the villagers were *Coccinia cordifolia, Enhydra fluctuans, Clerodendrum viscosum, Punica granatum, Syzygium cumini, Tamarindus indica, Aegle marmelos, Kalanchoe pinnata, Acacia arabica, Centratherum anthelminticum, Cynodon dactylon, Piper betle, Psidium guyava, Centella asiatica, Lannea grandis, Murraya paniculata, Pterocarpus santalinus, Basella alba, Averrhoa carambola, Paederia foetida, Glycyrrhiza glabra* etc (Table 1).

Medicinal plants used for the treatment of male sexual problems were *Aloe barbadensis, Mimosa pudica, Musa paradisiaca, Acacia arabica, Ocimum sanctum, Salmalia malabaricum, Asparagus racemosus, Sida cordifolia, Mucuna pruriens, Ficus benghalensis, Pterocarpus santalinus, Alstonia scholaris, Achyranthes aspera, Cassia sophera, Aegle marmelos, Clitoria ternatea, Piper betle, Coccinia cordifolia,* etc (Table 1).

Diabetes was treated by the villagers using plants such as *Abroma augusta, Aegle marmelos, Cajanus indicus, Catharanthus roseus, Cinnamomum tamala, Coccinia cordifolia, Enhydra fluctuans, Ficus carica, Melia azadirachta, Mimosa pudica, Momordica charanta, Moringa oleifera, Murraya koenigii, Musa paradisiaca, Piper longum, Punica granatum, Scoparia dulcis, Syzygium cumini, Tamarindus indica* etc (Table 1).

 

***Table 1:*** *Plants Used for the Treatment of Various Diseases in the Villages of Dakshin Dinajpur, West Bengal, India.*

| S.N. | Scientific name | Local name | Parts used | Uses |
|---|---|---|---|---|
| 1 | *Achyranthes aspera* Amaranthaceae | Apang, Chatchatia | Root, leaf, plant body | Joining of bones, rheumatism, reduces urine sugar, male sterility, piles, menstrual problem, urinary tract infection |
| 2 | *Aegle marmelos* Rutaceae | Bel | Leaf, root, bark, fruit | Reduces blood sugar, dysentery, stomach/liver problem |
| 3 | *Aloe barbadensis* Mill.(=*Aloe vera* Linn.) Burm.f Liliaceae | Ghritokumari, Kumari | Leaf | Headache, dysentery, reduces urine sugar, male sterility |
| 4 | *Alstonia scholaris* R.Br. Apocynaceae | Chhatim | Bark | Reduces urine sugar, male sterility |
| 5 | *Andrographis paniculata* Nees. Acanthaceae | Kalmegh | Leaf, whole plant | Fever, worm, stomach/liver problem |
| 6 | *Asparagus racemosus* Wild. Liliaceae | Satamuli/ Satavari | Root, leaf | Gall bladder infection, blood purifier, reduces urine sugar, male sterility |
| 7 | *Bacopa monnieri* (Linn) Pennell. Scrophulariaceae | Brahmi | Whole plant, root, leaf | Increases memory, nervous disorder |
| 8 | *Blumea lacera* De. Asteraceae | Kukursoka | Whole plant | Stomach/liver problem, loss of appetite |
| 9 | *Boerhavia diffusa* Linn. Ficoidaceae | Purnanaba | Leaf | Rheumatism, urinary tract infection |
| 10 | *Butea monosperma* (L) Tanb *B. Frondosa* Koen ex Roxb Pappilionaceae | Palash | Leaf, bark, flower, gum, seed | Skin care, urinary problem, worm, piles |
| 11 | *Calotropis procera* Asclepedaceae | Akanda | Leaf, flower, root, dried bark and gum | Cold–cough, rheumatism, piles, snake bite, asthma, headache |
| 12 | *Hydrocotyle asiatica* (Linn) Urban. Apiaceae | Thankuni | Pod, leaf | Dysentery, anti-inflammatory, jaundice, diuretic, diarrhea |
| 13 | *Centratherum anthelminticum* Wild. Asteraceae | Somraj | Leaf, seed | Dysentery, stomach/liver problem, cold–cough, worm |
| 14 | *Cinnamomum tamala* Fr. Nees. Lauraceae | Tejpata | Leaf, bark | Reduces blood sugar, cold–cough, memory decrease, quench thirst, skin care |
| 15 | *Cissus quadrangularis* Linn. Vitaceae | Harjora | Whole plant, leaf | Joining of bones, rheumatism, piles, menstrual problem, worm |
| 16 | *Clerodendrum viscosum* Vent. Verbenaceae | Bhati, Ghetu | Leaf, bud, root, whole plant | Malarial fever, any fever, worm, dysentery, stomach/liver problem, piles |
| 17 | *Coccinia cordifolia* Cogn. Cucurbitaceae | Telakutcha | Leaf | Reduces blood sugar, dysentery, stomach/liver problem, cold–cough, contraception, cardiac problem, reduces blood pressure |
| 18 | *Curcuma amada* Roxb. Zingiberaceae | Aam ada | Whole plant | Cold–cough, fever, piles, rheumatism |
| 19 | *Cyperus rotundus* Linn Cyperaceae | Motha | Plant body, bulbous root | Dysentery, poison bite |
| 20 | *Eclipta alba* Asteraceae | Bhimraj, Vringraj | Leaf, seed | Stomach/liver problem, anti-inflammatory, digestive, hair tonic |
| 21 | *Enhydra fluctuans* Asteraceae | Helencha | Plant body | Reduces blood sugar, dysentery, stomach/ liver problem, blood purifier |
| 22 | *Erythrina variegata* Linn. Leguminaceae | Kantamother/ Mother | Root, root bark, leaf | Rheumatism, male sexual problem, rickets, worm, menstrual problem |
| 23 | *Glycyrrhiza glabra* Linn. Leguminaceae | Jastimadhu | Roots and runner | Cold–cough, fever, diarrhea, allergy in respiratory tract |
| 24 | *Heliotropium indicum* Linn. Boraginaceae | Hatisur | Leaf | Rheumatism, fever, typhoid, cold–cough |
| 25 | *Hemidesmus indicus* R.Br. Asclepiadaceae | Anantamul | Root | Stomach/ liver problem, menstrual problem, piles, asthma |
| 26 | *Holarrhena antidysenterica* Well. Apocynaceae | Kurchi | Bark, seed | Scabies, antipyretic, amoebic dysentery |
| 27 | *Hygrophila spinosa* Nees. Acanthaceae | Kulekhara | Leaf, branch | Blood purifier, rheumatism, anemia, liver disease, male sexual problem |

  

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| 28 | *Kalanchoe pinnata* Pers. Crassulaceae | Patharkutchi | Leaf | Dysentery, stomach/liver problem, kidney/urinary infection, gall bladder infection, piles, cardiac problem |
| 29 | *Leucas cephalotes* Spreng. Lamiaceae | Kesta, Swetdrone | Leaf, flower | Jaundice, fever, cough, worm |
| 30 | *Marsilea minuta* Linn. Marsiliaceae | Sushni | Leaf, whole plant | Asthma, increases memory, blood pressure, nervous disorder |
| 31 | *Melia azadirachta* Linn. Meliaceae | Neem | Leaf, bark, root bark, flower, fruit, seed | Reduces blood sugar, fever, contraception |
| 32 | *Mimosa pudica* Linn. Mimosoideae | Lajjabati | Root | Reduces blood sugar, stomach/liver problem, reduces urine sugar, male sterility, sexual diseases of female, menstrual problem |
| 33 | *Momordica charantia* Cucurbitaceae | Karela | Fruit, seed | Reduces blood sugar, stomach/liver problem, gall bladder infection, blood purifier |
| 34 | *Moringa oleifera* Lamk Moringaceae | Sagina | Leaf, fruit | Reduces blood sugar, rheumatism, cardiac problem |
| 35 | *Mucuna pruriens* Hook. Leguminaceae | Alkushi | Root, seed | Reduces urine sugar, male sterility, male sexual problem, sexual diseases of female, rheumatism |
| 36 | *Murraya paniculata (L.*) Jack. Rutaceae | Kamini | Leaf | Dysentery, inflammation of ear, black fever |
| 37 | *Paederia foetida.* Linn. Rubiaceae | Gandal | Leaf | Stomach/ liver problem, dysentery, spermatorrhea, paralysis, rheumatism |
| 38 | *Phyllanthus emblica* Linn Euphorbiaceae | Amlaki | Dried fruit, seed | Acidity, blood sugar, purging, leucorrhea, biliary colic, insomnia |
| 39 | *Piper betle* Linn. Piperaceae | Pan | Leaf, root | Stomach problem, dysentery, gall bladder infection, contraception |
| 40 | *Piper longum* Linn. Piperaceae | Pipul | Root, stem, fruit | Reduces blood sugar, menstrual pain, colic pain, cold–cough |
| 41 | *Pongamia pinnata* Vent. Leguminaceae | Karanj | Bark, seed, leaf | Worm, cough, reduces blood sugar |
| 42 | *Pterocarpus santalinus* Linn. Leguminaceae | Chandan | Bark, stem | Reduces urine sugar, male sterility |
| 43 | *Ricinus communis* Linn. Euphorbiaceae | Reri (Erond) | Root, root bark, leaf, seed oil | Stomach/ liver problem, rheumatism, eye problem, headache, biliary colic |
| 44 | *Rauvolfia serpentina* Apocynaceae | Sarpagandha | Bark | Cardiac problem, mentally handicap, hypertension, insomnia |
| 45 | *Saraca indica* Linn. Leguminaceae | Ashok | Leaf, bark, seed | Stomach/liver problem, kidney/ urinary tract infection, sexual disease of female |
| 46 | *Sida cordata* (Burm.f.)Borss =*Sida veronicaefolia* Lamk. Malvaceae | Berala/ Bala | Leaf | Rheumatism, reduces urine sugar, male sterility |
| 47 | *Solanum virginianum* Linn. *S. surattense* Burm. f, *S. xanthocarpum* Sch. and Wendle. Solanaceae | Kantikari | Root | Cold–cough, rheumatism, fever, influenza, enlargement of liver and spleen |
| 48 | *Stephania hernandifolia Walp.* Menispermaceae | Aagnati, Aagnadi | Root, whole plant | Cholera, fever, dysentery, cough, stomach ache, contraception, irregular stool, leucorrhea |
| 49 | *Swertia chirayita* Ham. Gentianaceae | Chirata | Leaf, whole plant | Stomach/liver problem, spermatorrhea, worm, asthma, influenza |
| 50 | *Tamarindus indica* Linn. Leguminaceae | Tetul | Leaf, bark, fruit, seed | Reduces blood sugar, dysentery, stomach/liver problem, pox, rheumatism |
| 51 | *Termanalia arjuna* (Roxb.ex Dc.) Wight. and Arn. Combretaceae | Arjun | Bark, leaf, fruit | Blood pressure, spermatorrhea, blood dysenteries, joining of bones |
| 52 | *Terminalia bellirica* Retz. Combretaceae | Bahera | Fruit (ripe and unripe) | Cold–cough, insomnia, dropsy, vomiting, ulcer, trifala |
| 53 | *Terminalia chebula* Retz. Combretaceae | Haritaki | Fruit, seed | Trifala, wound ulcer, leprosy, inflammation, cough, piles, fever |
| 54 | *Tinospora cordifolia* (Willd.) Hook.f. and Thoms. Menispermaceae | Gulancha | Branch | Stomach/liver problem, jaundice, loss of appetite, fever, rheumatism, gall bladder infection, blood purifier |

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|---|---|---|---|---|
| 55 | *Tragia involucrata* Linn. Euphorbiaceae | Bichhutika | Root, fruit | Stomach/liver problem, rheumatism, irregular stool, asthma |
| 56 | *Tribulus terrestris* Linn. Zygophyllaceae | Gokhur | Whole plant, fruit, spine | Kidney/urinary tract infection, rheumatism, male sexual disease, nervous disorder |
| 57 | *Trigonella foenum-graceum* Linn. Leguminaceae | Methi | Leaf, seed, whole plant | Gynecological problem, pox, loss of appetite, sexual problem |
| 58 | *Vitex nigandu* Linn. Verbenaceae | Niscinda/ Narsingha | Root, fruit, flower, leaf and bark | Cold–cough, fever, rheumatism, increases memory |
| 59 | *Scoparia dulcis* L. Scrophulariaceae | Vassourinha, sweet broom | Leaf, plant body | Reduces blood sugar, anti-inflammatory, sore throat, cough |
| 60 | *Abroma augusta* Sterculiaceae | Ulatkamal | Leaf, bark | Reduces blood sugar, kidney/urinary tract infection, reduces urine sugar, male sterility, sexual diseases of female |
| 61 | *Litsea glutinosa* Lauraceae | Malibabla | Leaf, bark | Dysentery, reduces urine sugar, male sterility, sexual diseases of female |
| 62 | *Amaranthus spinosus* Amaranthaceae | Katakhura | Whole plant, leaf | Reduces urine sugar, male sterility |
| 63 | *Jatropha curcas* L**.** Euphorbiaceae | Bharenda | Stem, root | Dysentery, bad teeth, amoebic dysentery, blood dysentery |
| 64 | *Clerodendrum indicum* Verbenaceae | Bamunhati/ Brahmajasti | Leaf, stem | Asthma, rheumatism, anthelmintic |
| 65 | *Withania somnifera* Solanaceae | Aswagandha | Root | Nervous disorder, male sterility, sexual diseases of female |

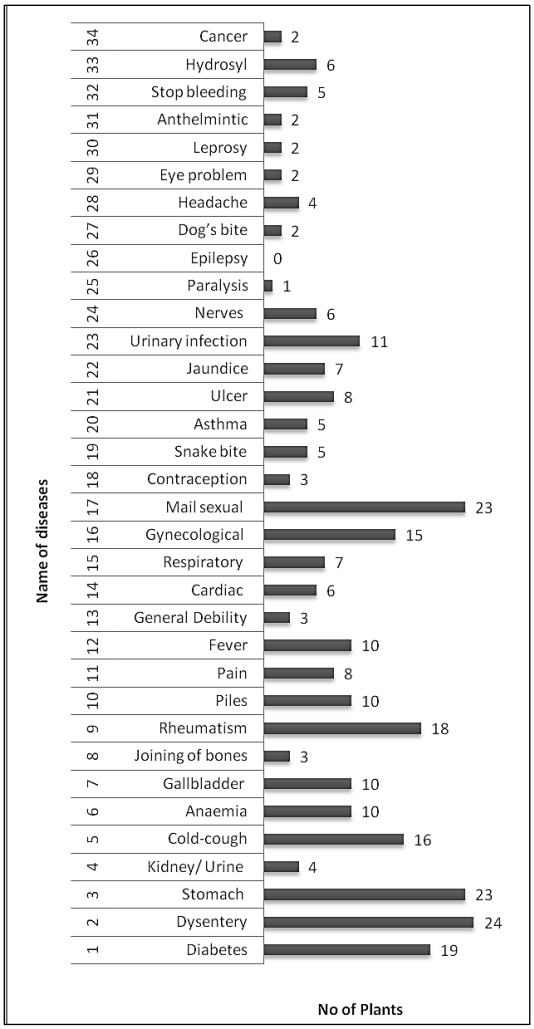


***Fig. 1:*** *Number of Plants Used for the Treatment of Various Diseases.*

## DISCUSSION

The present investigation has revealed the usage of 107 medicinal plants species mentioned by the villagers of Dakshin Dinajpur of West Bengal, India. These plants belong to the 96 genera and 48 families. Highest number of medicinal plants was found in the family Leguminaceae followed by Acanthaceae, Apiaceae, Apocynaceae, Cucurbitaceae, Euphorbiaceae containing four medicinal plants each. It was revealed that the ethnomedicinal plants were mostly used to cure the diseases such as dysentery, stomach/liver diseases, cold–cough, rheumatism, skin diseases, urinary tract infection etc. Some indigenous tribes from Northwest Mexico have traditionally used some medicinal plants to treat skin ailments by externally applying it on the affected areas [8, 9]. Muthu [10] also documented medicinal plants for the treatment of stomach ache, skin diseases, poison bites and nervous disorders after he made a survey on the uses of medicinal plants in Kancheepuram district of Tamil Nadu, India. Chhetri [11] made a survey on the antidiabetic plants used by Sikkim and Darjeeling Himalayan tribes of India. Antidiabetic potentials of some of the plants cited in the study had been previously reported by Aderibigebe [12]. The antidiabetic activity of aqueous leaves of *Mangifera indica* had been reported again by the same author [12]. In another study, the antidiabetic effect of aqueous leaves extract of some plants in rats was reported by Chakraborty and Das [13, 14].

## CONCLUSION

The present study has revealed that the tribals of Dakshin Dinajpur district are very rich in traditional knowledge. The tribals inherited the knowledge of rich traditional flora that has been investigated and they applied this knowledge to make crude phytomedicines to cure infections as simple as cold to as complicated as cancer. These crude herbal medicines were based not only on traditional knowledge but also on rituals and beliefs. The youngsters were not well versed about the uses; also they were not much interested to use the medicinal plants. Due to changing lifestyle and modernization, the younger villagers prefer allopathic medicines. Therefore, an ethnobotanical survey is necessary to record this vanishing traditional knowledge. Researchers who are working with plants having good medicinal properties should search new active principles from uncommon plants in Dakshin Dinajpur district of West Bengal, India. This will bring out new lead compounds to treat the ailments faced by mankind now a day.

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