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An ethnobotanical portrait of a village: Koikuri, Dinajpur with reference to medicinal plants

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Abstract

An ethnobotanical study of the village Koikuri, under Birol Upazilla of Dinajpur district was made. Information gathered through structural questionnaire and interviews shows that in the village, among 111 households 18 belong to the Santhal tribe who mostly use different plant species for their diseases and ailments. During the survey, 76 plant taxa belonged to 71 genera under 40 families were mentioned by them having economic importance, of which only the ethnomedicinal values of them were highlighted. All specimens were used only as medicine and while 35 had both medicinal and other economic importance. Different plant parts of different spp. are used as medicine for treating various diseases; bark of 7, leaf of 38, fruit of 20, root of 18, seed of 3, wood of 1, latex of 3, stem of 2, rhizome of 1, bulb of 2 and whole plant of 6 species were used as medicine. It was observed that the availability of these plants is decreasing at an alarming rate. This observation also reveals that habitat destruction, over exploitation and unplanned agriculture were the reasons for depletion of medicinal plants. Therefore, the medicinal plants used as traditional healthcare system need urgent conservation.

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Introduction

Ethnobotany deals with the relationship between human societies and plants. It has been recognized as multi-disciplinary science comprises of many interesting and useful aspects of plant science, history, anthropology, culture and literature. Its importance has been realized chiefly in respect of the varied economic uses of plants among the primitive human societies. However, in modern societies traditional uses of plants and their products are discussed under the ethnobotany. It thus brings to light numerous little known or unknown uses of plants, some of which have potential of wider usage (Jain 1996).

Bangladesh is very rich in ethnocultural heritage and traditional use of plant materials that may be of special interest in ethnobotanical informations. About 80 percent people of the country live in the villages and a considerable proportion is tribals living in remote forest areas (Ali, 1980).

The village "Koikuri" under Birol Upazilla of Dinajpur was selected as the study area due to its ethno-catted significance. During ethnobotanical field studies in the village we came across a large number of tribal people "Santhal" who are using wild and semi-wild plants for medicine and other purposes. This is first time ethnobotanical research in the study area. All data cannot be observed about this research.

Aims of the Study: A) To make an investigation about the present ethnobotanical status in the study area. B) Documentation of medicinal plants available in the study area. b) To know the extent of use of medicinal plants by the tribal people.

Materials and methods

The present work is mainly based on information gathered from the interview with the "Santhals" on the plants having economic importance to them. Relevant plants were collected from the study area, identified and preserved at the Herbarium of the Department of Botany, Rajshahi University. The data were collected either from local medicinemen or ordinary people who accompanied us in the field.

The present investigation is divided into two parts:

Part I. Interview with "Santhals", collection, study, identification and preservation of plants: First step was interviewing the "Santhals" about the plants they used in their daily life. These included the plants that have some economic importance as fruits, vegetables, furniture, drug, etc. Collections were made throughout the year and particular care was taken not to miss the flowering stages or the fruits. In all cases multiple sets of collections were made. During collection attempts were made to know the local names of the plants. All field data that cannot be observed from the herbarium specimen e.g. date, collection number, habitat, uses and distribution were recorded. Herbarium sheets were prepared in multiple sets and flowers were preserved in 70% alcohol for future study.

Publication of Anisuzzaman (2007), Bhattachariya (1989), Biswas (1973), Ghani (1988, 1998), Hassan (1988, 1993), Hooker (1877), Huq (1986, 1986), Khan (1975, 1998), Kirtikar (1987), Prain (1903) and Rahman (2008, 2010) were consulted for identification and information about of medicinal uses of the taxa.

Part II. Study of ethnobotanical aspects: For the present investigation interviews were taken from the "Santhals" in the study area about different aspects, i.e. a) Holding numbers, b) Owner of the house, c) Family members and age groups d) Source of income, e) List of plants used by them, f) Purpose of use, g) How much amount they used, h) Method of use, i) From where they get the plants and j) Abundance of the plants.

Results and discussion

Present ethnobotanical study in "Santhal" ethnic areas generated much important information that might be useful for primary healthcare programmed, economic

and agricultural policy, and alternative food programmed, discovery of new drug and biodiversity conservation and management action plant of Bangladesh. Since little work has been done in the field of ethnobotanical research in Bangladesh, information documented in this paper may be immense use in other fields of research. The information related to traditional used of plants by the "Santhal" community are comparatively new to the ethnobotanical service in Bangladesh (Khan, 1998).

Table 1. The table mentioned scientific name, family, local name, part use and process of use for each species.

Scientific name and family	Local name	Part use	Process of use
1. *Abrus precatorius* L. Family: Fabaceae	Kuch	Seed	Paste made from seeds is used in paralysis.
2. *Acalypha indica* L. Family: Euphorbiaceae	Muktajhuri	Leaf	Fresh leaf juice is used in skin disease.
3. *Achyranthes aspera* L. Family: Amaranthaceae	Apang	Leaf, root	Juice of roots is used in abortion and diuretic. Paste of leaves is used in eczema.
4. *Adhatoda vasica* Nees. Family: Acanthaceae	Basak	Leaf, bark	Juice made from young leaves is used in asthma and cough. Juice made from bark and leaves are used in vomiting and worm.
5. *Aegle marmelos* (L.) Correa Family: Rutaceae	Bel	Leaf, fruit	Juice of young leaves is used in abscess and fever. Decoction of immature fruits is used in baby's dysentery. Ripe fruits are used in indigestion.
6. *Aloe barbadensis* Mill. Family: Liliaceae	Ghritakumari	Leaf	It leaf mucilage is used in piles. Juice made from leaves is used in menstrual disease and sexual problems.
7. *Alstonia scholaris* (L.) R.Br. Family: Apocynaceae	Chatim	Bark	Juice made from bark is used in dysentery and fever.
8. *Allium cepa* L. Family: Liliaceae	Piaj	Bulb	Juice of bulb/scales is used in cough and headache.
9. *Allium sativum* L. Family: Liliaceae	Rashun	Bulb	Bulb is used in piles. Juice of bulb is used in rheumatism.
10. *Amaranthus spinosus* L. Family: Amaranthaceae	Kantanotey	Whole plant	Juice made from whole plant is used in asthma and fever.
11. *Amaranthus lividus* L. Family: Amaranthaceae	Noteysak	Root	Roots act as reduce menstrual flow.
12.*Andrographis paniculata* Nees. Family: Acanthaceae	Kalomegh	Leaf, whole plant	Paste of leaves is used in wound and itches. Juice made from whole plants is used in dysentery, diarrhoea and fever. Juice of leaves

			mixed with salt and water used in helminthiasis.
13. *Ananas sativus* Schult.f. Family: Bromeliaceae	Anaros	Fruit	Juice of unripe fruit is used in abortion. Ripe fruit is used cough, diuretic, fever, helminthiasis and worm.
14. *Annona squamosa* L. Family: Annonaceae	Ata	Leaf, root	Pastes of leaves are used in abscess. Juice of roots is used in dysentery.
15.*Artocarpus heterophyllus* Lamk. Family: Moraceae	Kathal	Leaf, root, bark	Juice made from young leaves is used in asthma and itches. Juice made from young roots is used in diarrhoea. Juice made from bark is used in excessive menstrual discharge.
16. *Argemone mexicana* L. Family: Papaveraceae	Sialkanta	Root, stem, latex	Juice made from roots is used in diuretic. Curry made from of stems is used in diabetes and jaundice. Latex is used in itches and skin disease.
17. *Asparagus racemosus* L. Family: Liliaceae	Satamuli	Root, whole plant	Juice made from the tuberous roots is used in diarrhoea, diabetes and jaundice. Juice of whole plant used in urinary disease.
18. *Averrhoa carambola* L. Family: Averrhoaceae	Kamranga	Fruit	Fruits are used in fever and jaundice. Fruit is also eaten a good remedy for bleeding piles.
19. *Azadirachta indica* A. Juss. Family: Meliaceae	Neem	Leaf	Juice made from young leaves mixed with water of boil rice used in worm. Leaves are used in chickenpox. Paste of leaves is used in eczema and itches. Juice made from young leaves mixed with salt and water used in helminthiasis.
20. *Bombax ceiba* L. Family: Bombacaceae	Shimul	Bark, root	Juice made from barks is used in dysentery and excessive menstrual discharge. Juice made from immature plant roots are used in diabetes and sexual problems.
21. *Borassus flabellifer* L. Family: Arecaceae	Tal	Fruit	Pulp of unripe fruit is used in diuretic.
22. *Cajanus cajan* (L.) Millsp. Family: Fabaceae	Arhar	Leaf, root	Decoction of leaves is used in cattle dyspepsia. Juice made from roots is used in diabetes. Juice made from young leaves is used in jaundice.
23. *Calotropis procera* Br. Family:Asclepiadaceae	Akanda	Leaf	Extract of leaves are used in piles.
24. *Clerodendrum viscosum* Vent.	Bhant	Leaf	Juices made from leaves are used in vomiting, worm and dyspepsia.

Family: Verbenaceae			
25. *Cassia alata* L. Family: Fabaceae	Dadmardan	Leaf	Decoction of leaves is used in eczema.
26. *Cynodon dactylon* Pers. Family: Poaceae	Durba	Leaf, whole plant	Paste made from young leaves is used in skin disease. Paste made from whole plant is used in stop bleeding and wound.
27. *Curcuma longa* L. Family: Zingiberaceae	Holdi	Rhizome	Rhizome is properly used in abscess. Paste made from rhizome is used in eczema.
28. *Citrus grandis* (L.) Osb. Family: Rutaceae	Jambura	Fruit	Juice made from ripe fruit is used in anaemia.
29. *Cocos nucifera* L. Family: Arecaceae	Narikel	Root, fruit	Juice of roots is used in diuretic and menstrual disease. Green coconut water is commonly used as dehydrating agent in diarrhoea.
30. *Cassia sophera* L. Family: Fabaceae	Kalkasunda	Leaf, root	Decoction of leaves and roots are used in dyspepsia.
31. *Carica papaya* L. Family: Caricaceae	Papaya	Fruit, latex	Fruit juice is used in constipation. Latex is used in itches. Ripe fruits are used in indigestion, liver disease and diarrhoea.
32. *Coccinea cordifolia* (L.) Cogn. Family: Cucurbitaceae	Telakucha	Leaf	Vegetable made from young leaves are used in diabetes and fever.
33. *Cuscuta reflexa* Roxb. Family:Convolvulaceae	Sarnalata	Whole plant	Decoction of whole plant is used in liver disease.
34. *Centella asiatica* (L.) Urban Family: Apiaceae	Thankuni	Whole plant, leaf	Vegetable of whole plants are used in dysentery. Paste made from young leaves is used in eczema and headache.
35. *Dalbergia sissoo* Roxb. Family: Fabaceae	Sissoo	Wood	Paste made from wood is used in abscess.
36. *Datura metel* L. Family: Solanaceae	Dhutra	Leaf	Cigarette made from it leaves are smoked in asthma. Pastes made from leaves are used in rheumatism.
37. *Erythrina variegata* L. Family: Fabaceae	Madar	Bark, root, leaf	Juice of bark is used in fever. Juice made from roots are used the flow of menstrual period when this is absent. Juice made from leaves is used in toothache.
38. *Eclipta alba* (L.) Hassk. Family: Asteraceae	Kalokeshi	Leaf	Paste made from young leaves is used in wound and skin disease.
39. *Ficus benghalensis* L. Family: Moraceae	Bot	Leaf	Leaves are useful applied as poultice in abscess.
40. *Ficus recemosa* L.	Jogdumur	Latex,	Latex is used in piles. Curry made from unripe

Family: Moraceae		fruit	fruit is used as diabetes.
41. *Feronia limonia* (L.) Swingle Family: Rutaceae	Kathbel	Leaf, fruit	Juice made from leaves is used in vomiting. Fruit pulp is used in diuretic.
42. *Glycosmis pentaphylla* Corr. Family: Rutaceae	Datmajan	Fruit, leaf	Juice of ripe fruit is used in dysentery. Juice of leaves is used in jaundice.
43. *Heliotropium indicum* L. Family: Boraginaceae	Hatisur	Leaf	Decoction of leaves is used in fever. Paste made from leaves is used in skin disease.
44. *Justicia gendarussa* L. Family: Acanthaceae	Jagathmadan	Leaf	Juice made from leaves is used in asthma. Paste made from leaves is used in fracture, itches and wound.
45. *Kalanchoe pinnata* (Lamk.) Pers. Family: Crassulaceae	Patharkuchi	Leaf	Juice made from young leaves is used in cough, dysentery, diuretic and diabetes. Paste of leaves is used in fracture.
46. *Lawsonia inermis* L. Family: Fabaceae	Mehendi	Leaf	Paste made from leaves is used in wound and burning sensation.
47. *Leucas lavendulifolia* Sm. Family: Lamiaceae	Setadron	Leaf	Juice made from young leaves is used in fever and worm.
48. *Moringa oleifera* Lamk. Family: Moringaceae	Sogina	Fruit, root	Fruits are used in chickenpox and paralysis. Decoction of roots is used in fever.
49. *Mangifera indica* L. Family: Anacardiaceae	Am	Leaf	Decoction of young leaves is used in toothache.
50. *Musa paradisiaca* L. Family: Musaceae	Kala	Fruit	Sap of the central cylindrical stem of the fruited plants is used in blood pressure.
51. *Momordica charantea* L. Family: Cucurbitaceae	Korola	Leaf, fruit	Juice made from leaves is used in chickenpox and rheumatism. Curry made from unripe fruit is used as diabetes.
52. *Mimosa pudica* L. Family: Fabaceae	Lajjabati	Root	Decoction of roots is used in fever. Juice of root is used in snake-bite.
53. *Oxalis corniculata* L. Family: Oxalidaceae	Amrul	Leaf	Juice made from leaves is used in anaemia. Vegetable made from young leaves are used in cough.
54. *Ocimum sanctum* L. Family: Lamiaceae	Tulsi	Leaf, root	Juice made from young leaves is used in cough. Juice of roots is used in fever.
55. *Phyllanthus emblica* L. Family:Euphorbiaceae	Amlaki	Fruit	Ripe fruits are used in burning sensation, vomiting, cough and indigestion. Dried fruits are used in jaundice.
56. *Punica granatum* L. Family:Punicaceae	Dalim	Fruit	Juice of fruits is used in anaemia. Immature fruit juice is used in dysentery. Ripe fruits are used in diarrhoea.

57. *Physalis minima* L. Family: Solanaceae	Kapalphutki	Root	Juice made from roots is used in diuretic.
58. *Psidium guajava* (L.) Bat. Family: Myrtaceae	Piyara	Bark, fruit, leaf	Juice made from the stem bark is used in blood dysentery. Fruits are used in diarrhoea. Decoction of leaves is used in toothache. Young fruits are used in worm.
59. *Rauvolfia serpentina* Benth. Family: Apocynaceae	Sarpagandha	Root	Juice made from roots is used in blood pressure and heart disease. Decoction of roots is used in dysentery and diarrhoea.
60. *Ricinus communis* L. Family: Euphorbiaceae	Rendri	Seed, leaf	The oil extracted from the seeds is used in rheumatism. Paste made from leaves is used in headache.
61. *Syzygium cumini* Skiel. Family: Myrtaceae	Jam	Bark, seed	Paste made from the bark is used in dysentery and wound. Dry seed dust mixed with normal water used in diabetes.
62. *Scoparia dulcis* L. Family:Scrophulariaceae	Talmisri	Root	Juice made from roots is used in snake-bite.
63. *Solanum nigrum* L. Family: Solanaceae	Kakmachi	Fruit	Juice made from green fruits is used in diuretic and heart disease.
64. *Tamarindus indica* L. Family: Fabaceae	Tentul	Fruit, leaf	Ripe fruit pulps are used in burning sensation. Juice of leaves is used in heart disease.
65. *Terminalia arjuna* Bedd. Family: Combretaceae	Arjun	Leaf, bark, fruit	Leaf soaked in water over night in burning sensation. Juice made from bark mixed with water used in blood pressure. Dust made from dry shoot bark mixed with water used in heart disease. Unripe fruits are used in worm.
66. *Terminalia belerica* Roxb. Family: Combretaceae	Bohera	Fruit, seed	Fruits are used in burning sensation. The oil extracted from the seeds is used in rheumatism.
67. *Terminalia chebula* Retz. Family: Combretaceae	Haritaki	Fruit	Ripe fruits are used in constipation and indigestion. Unripe fruits are used in rheumatism and urinary disease.
68. *Vitex negundo* L. Family: Verbenaceae	Neshinda	Root, leaf	Juice of roots is used in fever. Paste of leaves is used in rheumatism.
69. *Vitis quadrangularis* Wall. Family: Vitaceae	Harzora	Stem	Paste made from the stem barks are used in bone fracture.
70. Zizyphus mauritiana Lamk. *Family: Rhamnaceae*	Boroi	Leaf	Paste made from young leaves is used in headache.

Plant used by other purposes

1. Plant used for Tooth Brush

Local name	Scientific name	Part used
Neem	*Azadirachta indica* A. Juss.	Stem
Piyara	*Psidium guajava* (L.) Bat.	Stem
Jam	*Syzigium cumini* Skiel	Stem
Lalverenda	*Jatropha gossypifolia* L.	Stem
Atissora	*Glycosmis pentaphylla* Corr.	Stem

2. Plant used for Dye.

Local name	Scientific name	Part use	Process of use
Pui	*Basella alba* L.	Ripe fruit	Violate dye
Sitki	*Phyllanthus reticulatus* Poir.	Ripe fruit	Violate dye
Tetul	*Tamarindus indica* L.	Seed power	Dye
Mehedi	*Lawsonia inermis* L.	Leaf	Dye

3. Plant used in Veterinary

Local name	Scientific name	Part use	Process of use
Kantanotey	*Amaranthus spinosus* L.	Whole plant	Increasing cow milk.
Kadam	*Anthocephalus chinensis* (Lamk.) Rich ex Walp.	Stem bark	Cattle dyspepsia
Sogina	*Moringa oleifera* Lamk.	Stem bark	Cattle dyspepsia
Piyara	*Psidium guajava* (L.) Bat.	Stem bark	Cattle wound.
Dalim	*Punica granatum* L.	Fruit	Pig ascaris
Tetul	*Tamarindus indica* L.	Ripe fruit	Pig diarrhoea

4. Plant spine used as Traditional Needle

Local name	Scientific name	Process of use
Bel	*Aegle marmelos* (L.) Correa	Perforating ear and nose.
Kejur	*Phoenix sylvestris* (L.) Roxb.	Cake design.
Boroi	*Zizyphus mauritiana* Lamk.	Burst boils and abscess.

5. Plant used in Various Religious Worship.

Local name	Scientific name	Part used
Bel	*Aegle marmelos* (L.) Correa	Leaf
Simul	*Bombax ceiba* L.	Tree
Bot	*Ficus benghalensis* L.	Tree
Pakur	*Ficus religiosa* L.	Tree
Tulshi	*Ocimum sanctum* L.	Whole plant

6. Plant used in preparation of Fermenting medium for their Traditional Liquor.

Local name	Scientific name	Part used
Kathal	*Artocarpus heterophyllus* Lamk.	Young leaf
Dhan	*Oryza sativa* L.	Grain
Akh	*Saccharum officinarum* L.	Tip leaf

7. Plant related children's games and toys.

Local name	Scientific name	Part used	Games/Toy
Kathal	*Artocarpus heterophyllus* Lamk.	Leaf	Noddang-dakka
Kejur	*Phoenix sylvestris* (L.) Roxb.	Seed	Guti khela

8. Plant used for Various Purposes.

Local name	Scientific name	Part used	Purpose
Neem	*Azadirachta indica* A. Juss.	Fruit juice	Lice killer
Bans	*Bambusa balcooa* Roxb.	Stem	House construction.
Simul	*Bombax ceiba* L.	Wood, leaf	Fuel. Cheap furniture.
Tal	*Borassus flabellifer* L.	Fruit juice, leaf	Cake, Hand fan.
Narikel	*Cocos nucifera* L.	Coir	Mosquito repellent
Kejur	*Phoenix sylvestris* (L.) Roxb.	Leaf	Mat

From the available information it is revealed that this ethnic community used plant species, which are not generally used by other population of the village. Data have been gathered on the traditional uses of plant species, especially for abscess, for asthma, for abortion, burning sensation, blood pressure, cough, chickenpox, constipation, dysentery, diarrhoea, diabetes, eczema, fever, fracture, headache, heart disease, itches, jaundice menstrual disease, paralysis, skin disease, snake-bite, sex problem, tooth disease, vomiting, wound, worm and others.

Further, this ethnic community is using plant species or their parts for various other purposes, e.g. in poultry disease, as traditional needle, for children's games and toys, for dye, in preparation of fermentation agent, for tooth brush and used in different worship.

A striking fact is revealed in this study that the ethic community, although anthropologically old, their population increase is noticeably lower than the plain land population. The probable season may be sought in the pharmacognostic and pharmacological research into the plant species used as antifertility and natural contraceptives that are being used by this ethnic group (Jain, 1995).

Most of the Santhal in the village "Koikuri" are poor and illiterate. In one hand, these Santhals are out of the reach of modern medicines and on other hand, the market price of most available medicines are very expensive. As a result, these medicinal plants are used by them to cure all of the diseases. The wide use of local flora by the tribal people suggests that cultivation and conservation of indigenous useful plants should be encouraged. There is a need of intensive work in this direction which may help tribal development (Ali, 1980).

By applying survey, interview, collection and identification methods, different ethno botanical information were accumulated. The well analyzed and

check listed information about the plant materials collected from the study area are described below.

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