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Research Article

Ethnobotanical And Philological Investigations In Akkalkuwa Tehsil of Nandurbar District (Maharashtra, India)

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Abstract: This present attempt made it possible to obtain ethnobotanical information on 60 plant species belonging to 53 genera and 40 families of angiosperms, one species being a pteridophyte. They are employed to combat various human diseases and are treated using medicinal recipes such as infusion, decoction, oil, sap, juice, ash, powder, warmed plant parts. They employ underground parts, stem-bark, stem-axis, young shoots, leaves, flowers, fruits, seeds, etc. The tribals and rural people also extend their recipes for beauty-care. Apart from medicinal utilities, employment of plants for hut construction, fish-poison, wine preparation, food, religious worships and festivals have been also noted during this study. Interestingly, some vernacular plant names are found interesting and studied for their origin and utility in the region. Trees constitute a major segment in local utilities. These ethnomedicines need obviously further scientific evaluation to have new sources of drugs.
Keywords: Ethnobotany, Philology, Akkalkuwa Tehsil, India

INTRODUCTION

Akkalkuwa tehsil of Nandurbar district is situated in northern part of Maharashtra. The entire district and the tehsil Akkalkuwa in particular is studded with tribal population. The tribes such as Pawara, Bhil, Vasave, Tadwi, Raut, Naik, Valvi, etc. inhabit this region. They have distinct culture with respect to festivals, dances, songs, tales, dialects, rites and rituals. The area receives ranges of Satpudamountain wherein dry deciduous types of forests are observed. Tapi and its tributaries drain in this region. There are three seasons *viz.*, rainy, winter and summer. May is the hottest month, while July to September receives maximum precipitation and has generally average rainfall $\pm$ 674.0mm. Winds are generally light to moderate but are strengthened in force during summer and monsoon periods.

The tribal and rural people are basically agrarian and agriculture is their mainstay of life. Crops such as cereals, millets and pulses constitute their staple food. Although so, they have to depend also on natural vegetation partially for their sustenance. They also rear domestic animals.

The said tehsil, as a part of Dhule and Nandurbar districts, has been already investigated for its biodiversity [10]. It is partially studied ethnobotanically[1-5, 14]. This tehsil is still underexplored ethnobotanically. It is therefore selected by guiding teacher Professor D.A.Patil to tap folklore for understanding scope and potentiality of bioresources of the region under study.

METHODOLOGY

Ethnobotanical and philological investigations are carried from July 2012 to March, 2013 in Akkalkuwa tehsil of Nandurbar district of Maharashtra State (India). Nearly all three seasons are covered for this study. The tribals and non-tribals were interviewed for obtaining their traditional knowledge regarding bioresources available to them. Elder persons, medicinmen, heads of societies and villages were consulted during these visits. Information w.r.t. plant species in use, useful part, purpose, etc. were noted in field. Actual personal observations were also made by the present authors. Plants collected have been dried and made into herbarium specimens. They are identified by using local floras [6-7, 10]. The observations have been presented in Table-1 serially. Serial numbers also stand for the respective collection number of plant species. Plant name, family, local plant name, status (wile/cultivated) are given in this table. Recipes, doses, administration of medicine, name of disease/utility, etc. are provided under the column 'Utility'.

Table-1: Ethnobotanical Observations In Akkalkuwa Tehsil (Part-I):

Sr.No. *1*	*Plant Name* *2*	*Family* *3*	*Local Name* *4*	*Status & Habit* *5*	*Part Used* *6*	*Utility* *7*
1.	Teminaliachebula Retz.	Combretaceae	Hirda	Wild, Tree	Seeds, Twigs	Seed paste applied on gums to increase their strong, young piece of twig used as tooth-brush to treat tooth-ache, daily once till cure.
2.	Desmodiumgangetium (L.) DC.	Papilionaceae	LeptiModri	Wild, Herb	Twigs	Fresh twig chewed and juice of stem applied on boils of tongue daily once for 3-4 days.
3.	Wrightiatinctoria R.Br.	Apocynaceae	Kuwda	Wild, Tree	Bark	Powder of stem-bark kept in water for few hours, a cup of infusion of it drunk to check omitting and diarrhea till cure.
4.	Ocimumtenuiflorum L.	Lamiaceae	Tulsi	Planted, shrub	Leaves	Leaves consumed to treat cough and cold 2-3 times a day for 3-4 days.
5.	Azadirachtaindica A. Juss.	Meliaceae	Nimb	Wild, Tree	Leaves	Leaf paste kept in hot water for few hours, then employed for bath to treat scabies for 5- days.
6.	Oroxylumindicum (L.) Vent.	Bignoniaceae	Tetwa	Wild, Tree	Bark	Bark warmed and then tied on swellings and injuries on body till cure.
7.	Phoenix sulvestris (L.) Roxb.	Arecaceae	Hindivala	Wild, Tree	Fruits	Ripe fruits consumed
8.	Mangiferaindica L.	Anacardiaceae	Amba	Planted, Tree	Leaves	Ash of leaves applied on injuries or wounds till cure.

Sr.No. *1*	*Plant Name* *2*	*Family* *3*	*Local Name* *4*	*Status & Habit* *5*	*Part Used* *6*	*Utility* *7*
9.	VentilagodeticulataWilld.	Rhamnaceae	Asadwel	Wild, Lianas	Bark	Paste of stem-bark applied on chest to reduce pains in chest for 2-3 days.
10.	Cymbopogon martini (Roxb.) Wats.	Poaceae	Rohyya	Wild, Herb	Leaves	Leaf-oil used to massage body thereby increasing good health.
11.	GrewiatiliaefoliaVahl	Tiliaceae	Taman	Wild, Trees	Fruits	Ripe fruits cherished.
12.	BoswelliaserrataRoxb. ex.Coleb	Burseraceae	Gugala	Wild, Trees	Bark	Fresh bark chewed to control cough once a daily for 3-4 days.
13.	Martyniaannua L.	Martyniaceae	Nakhya	Wild, Shrubs	Seeds	Paste prepared from seeds applied on nails to check pain of nails till cure.
14.	EmblicaofficinalisGaertn.	Euphorbiaceae	Awada	Wild/Planted, Trees	Fruits	Fruits consumed to check dysentery.
15.	Tridaxprocumbens L.	Asteraceae	KhodkyaKhod	Wild, Herbs	Leaves	Leaf paste applied on injuries to avoid infection.
16.	Schleicheraoleasa (Lour.) Oken	Oleaceae	Kuhumb	Wild, Trees	Fruits	Fruits cherished.
17.	Madhuca J.F.Gmel.	Sapotaceae	Mohu	Wild, Trees	Seeds, Flowers	Seed oil consumed. Flowers used for preparing wine.
18.	DiospyrosmelanoxylonRoxb.	Ebenaceae	Tembra	Wild, Trees	Fruits, Leaves	Fruits consumed, leaves used for preparing wine.
19.	Syzygiumheyneanum (Duthie) Wall. ex Gamble	Myrtaceae	Jambhul	Wild, Trees	Fruits	Fruits cherished, seeds useful to check diabetes.

Sr.No. *1*	*Plant Name* *2*	*Family* *3*	*Local Name* *4*	*Status & Habit* *5*	*Part Used* *6*	*Utility* *7*
20.	GarugapinnataRoxb.	Burseraceae	Kakad	Wild, Trees	Twigs	Fresh twigs yield white watery sap, sap applied on eyes against cataract.
21.	Terminaliacrenulata Roth	Combretaceae	Hojalya	Wild, Trees	Bark	Stem-bark used to prepare wine.
22.	CareyaarboreaRoxb.	Lecythidaceae	Kumba	Wild, Trees	Bark	Infusion of bark administered to check diarrhea and omitting, a cup of it advised daily till cure.
23.	Ocimumamericanum L.	Lamiaceae	Aad	Wild, Herbs	Leaves with twigs	Leafy twigs shaken for some time to kill fleas in houses or rooms.
24.	ZiziphusrugosaLamk.	Rhamnaceae	Tora	Wild, Lianas	Fruits	Ripe fruits cherished.
25.	Ficusracemosa L.	Moraceae	Umbar	Wild, Trees	Fruits, Leaves, Bark	Fruits cherished. Leaf-juice applied on scorpion-sting. Infusion of bark drunk to check dysentery.
26.	Glinuslotoides L.	Molluginaceae	Kadama	Wild, Herbs	Leaves	Leaves consumed as vegetable to reduce body-ache.
27.	CuscutachinensisLamk.	Cuscutaceae	Dabyaate, Amarvel	Wild, Climber	Stem-axes	Infusion obtained from crushed stem-axes and drunk to control jaundice, ½ cup of it administered daily once till cure.
28.	Dioscoreabulbifera L.	Dioscoreaceae	Karadya Kanda	Planted, Climber	Bulbils Tubers	Bulbils and tubers consumed.
29.	Terminaliabellirica (Gaertn.) Roxb.	Combretaceae	Behada	Wild, Trees	Fruits	Pericarps of fruits are eaten to treat cough.
30.	Buteamonosperma (Lamk.) Taub.	Papilionaceae	Palas	Wild, Trees	Flowers	Infusion of flowers, about a glass, drunk to treat sunstroke.

Sr.No. *1*	*Plant Name* *2*	*Family* *3*	*Local Name* *4*	*Status & Habit* *5*	*Part Used* *6*	*Utility* *7*
31.	Euphorbia geniculataOrteg.	Euphorbiaceae	Dudhali	Wild, Herbs	Roots	Crushed roots dipped in water, this infusion (1/2 cup) drunk by ladies to increase lactation.
32.	Bauhinia racemosaLamk.	Caesalpiniaceae	Hingala	Wild, Trees	Fruits, Leaves	Green pods used for vegetable. Leaves offered to fellowmen to express best wishes on the day of Dasera festival.
33.	Bauhinia purpurea L.	Caesalpiniaceae	Kasan	Wild, Trees	Flowers	Flowers used as vegetable.
34.	Peristrophebicalyculata Clarke	Acanthaceae	JakhmiOhal	Wild, Herbs	Leaves	Leaf paste applied on injuries.
35.	Tamilnadiauliginosa (Retz.) Tirvengadium&Sanstre	Rubiaceae	Karawa	Wild, Small Trees	Leaves	Leaves used for worshipping in Diwali festivals.
36.	DendrocalamusstrictusNees.	Poaceae	Vahana	Wild, Shrubs	Young shoots	Young sprouts used as vegetable. Paste of green culms applied on fingers to check pains in finger joints.
37.	MoringaoleiferaLamk.	Moringaceae	Hegwa	Planted, Trees	Bark	Paste of bark applied on shoulders for shoulder-ache.
38.	Desmodiumdichotomum (Willd.) DC.	Papilionaceae	Modri	Wild, Herbs	Stem	Stem chewed and also used as tooth-brush to cure boils on tongue.
39.	Ensetesuperbum (Roxb.) Cheesm.	Musaceae	Kuwa	Wild, Herbs	Inflorescen-ce Axis	Fresh young inflorescence axis used as vegetable, also useful to increase urination.
40.	Saccharumofficinarum L.	Poaceae	Ooos	Planted, Herbs	Stem Axis	Stem-axis chewed/consumed to check jaundice.
41.	Typhadomingensis Pers.	Typhaceae	DeoBajara	Wild, Herbs	Hairy Fruits	Hairy fruits tied on cuts or injuries.

Sr.No. *1*	*Plant Name* *2*	*Family* *3*	*Local Name* *4*	*Status & Habit* *5*	*Part Used* *6*	*Utility* *7*
42.	Marsileaminuta L.	Marsileaceae	Shilapala	Wild, Plants (Herbs)	Leaves	Leaves consumed as vegetable.
43.	Aloe vera L.	Liliaceae	Detki	Wild, Shrubs	Leaves	Leaf pulp applied on face to remove dark spots and to treat pimples.
44.	Citrus aurantifolia (Christm.) SW.	Rutaceae	Limbu	Planted, Trees	Fruits	Fruits juice applied on head to remove dandruff.
45.	Eranthemumroseum (Vahl) R.Br.	Acanthaceae	Huni-agadadi	Wild, Shrubs	Leaves Inflorescen-ce	Leaves and inflorescence used for worship during Diwali festival.
46.	Ipomoea sepiariaKoen. ex. Roxb.	Convolvulaceae	Kumbrahavel	Wild, Climbers		Warmed leaves tied on hands or legs for their aching.
47.	Cyathoclinepurpurea (D.Don) O.Ktze.	Asteraceae	Rung Hal	Wild, Herbs	Entire plants	Plants used for worshiping during Diwali and other festivals.
48.	Calotropisprocera (Ait.) R. Br.	Asclepiadaceae	Aakada	Wild, Shrubs	Leaves	Warmed leaves tied on foot sole before removing thorns, latex applied after removal of thorns to cure injury.
49.	Pongamiapinnata (L.) Pierre	Papilionaceae	Kanja	Wild/ Planted Trees	Stem	Stem pieces used as tooth-brush to remove smell of mouth.
50.	Ficusbengalensis L.	Moraceae	Wad	Wild/ Planted Trees	Bark, Roots	Decoction of bark and roots drunk to avoid hair-fall.
51.	Ficusreligiosa L.	Moraceae	Pimpal	Wild/ Planted Trees	Bark	Bark paste applied on bone fracture.
52.	SapindusemarginatusVahl	Sapindaceae	Habanya	Wild, Trees	Fruits	Infusion of fruits dropped in nose (2-3 drops) to check head-ache.

Sr.No. *1*	*Plant Name* *2*	*Family* *3*	*Local Name* *4*	*Status & Habit* *5*	*Part Used* *6*	*Utility* *7*
53.	Salmaliamalabarica (DC.) Schott.	Bombacaceae	Hawara	Wild, Trees	Flowers	Flowers used as vegetable, also used during worship of Holi festival.
54.	Cassia sophera L.	Caesalpiniaceae	Shina	Wild, Herbs	Leaves	Leaf paste prepared in sesamum oil used to massage in case of weak child.
55.	Annonasquamosa L.	Annonaceae	Sitaphal	Wild/Planted Trees	Seeds	Seed paste applied on head to kill lices.
56.	Carviacallosa (Nees.) Bremek.	Acanthaceae	Karay	Wild, Shrubs	Stem	Stem-axes employed to construct huts.
57.	Catunaregamspinosa (Thunb.) Tirvengadum	Rubiaceae	Gal	Wild, Shrubs	Fruits	Fruit paste employed to stupefy fishes.
58.	Puerariatuberosa (Roxb. et. Willd.) DC.	Papilionaceae	Pithuda, Shirvala	Wild, Lianas	Tubers	Dried tubers yield flour which is consumed as bread.
59.	SterculiaurensRoxb.	Sterculiaceae	Kadai, Kudal	Wild, Trees	Seeds	Seeds cherished.
60.	Vitexnegundo L.	Verbenaceae	Nirgudi	Wild, Shrubs	Leaves	Infusion of leaves added in bath water especially of a woman after delivery to reduce body swelling.

Part-II: Philology of Vernacular Plant Names

1. ***Terminaliachebula Retz.*** (Combretaceae):
V.N.: Hirda, derived from hirdya meaning gums. Use of seed paste and stem use as tooth-brush for increasing strength of gums is noted in these societies.

2.***Desmodiumgangeticum*** (L.) DC. (Papilionaceae):
V.N.: Lepti derived from lapetane meaning sticking to clothes. The fruits have hooked hairs and hence stick to the clothes of passersby, hence the name.

3.***Martyniaannua L.*** (Martyniaceae):
V.N.: Nakhya, derived from nakh meaning nails (of animal fingers). The hooked fruits are compared with the bent nails of certain animals.

4.***Careyaarbore Roxb.*** (Lecythidaceae):
V.N.: Kumba, derived from kumbha meaning collarel water pot. The fruits resemble in shape to a local water pot.

5.***Euphorbiageniculata Orteg***. (Euphorbiaceae):
V.N.: Dudhali, derived from dudh meaning milk. The plants exude milky latex on cutting their parts.

6.***Peristrophebicalyculata Clarke*** (Acanthaceae):
V.N.: JakhmiOhal, derived from jakham meaning injury. Leaf paste is locally applied on injuries.

7. ***Tamilnadiauliginosa (Retz.)*** Tirvengadum&Sastre (Rubiaceae):
V.N.: Katawa, derived from kata meaning thorns or spines. The plant bears pointed spines/thorns.

8.***Typhadomingensis Pers***. (Typhaceae):
V.N.: DeoBajara, derived from bajara-a cereal (Pennisetumamericanum). Inflorescence and cobs of both these plant species resemble much to each other, hence the name.

9.***Calotropisprocera (Ait.) R.Br***. (Asclepiadaceae) :
V.N.: Rui, derived from rui meaning cotton. The fruits have comose seeds which resemble cotton balls/hairs, hence denoted in the local name.

10.***SapindusemarginatusVahl*** (Sapinidaceae):
V.N.: Habnya meaning soap. The fruits are used to wash hairs on head.

RESULTS AND DISCUSSION

During ourethnobotanical forage in Akkalkuwa tehsil of Nandurbar district (Maharashtra, India), a total of 60 plant species have been found of use to tribals and rural communities. They belong to 53 genera and 40 families of angiosperms, except one being a pteridophyte. Their status however is not uniform. Of these, 47 species are exclusively wild, whereas 04 species are under cultivation and other 05 species are cultivated or also run wild in the region under study. It is to be further noted that majority of species (31) are trees, while other categories are found in vogue in descending order e.g. herbs (14 species), shrubs (14 species), lianas and climbers (03 species each). It is evident that trees, being perennials, are exploited extensively in different seasons of a year. Different parts of these species are employed for various purposes such as food, medicine, hut construction, fish stupefying, festivals and worships, to kill fleas and prepare wines, etc. The present authors also noted their use-reports plant part-wise in descending order as: (i) leaves (18), (ii) fruits (14), (iii) stem-bark (09), (v) twigs and stem-axes (04 each), (vi) flowers (03), (vii) tubers and inflorescence-axes (02 each), and (viii) roots, young shoots and entire plants (01 each). It is evident that leaves and fruits constitute a considerable segment of the local utilities by these inhabitants, whereas the other plant parts find comparatively lesser importance.

Medicinal utilities appear to occupy topmost priority amongst the various plant-based application in these societies. As many as 36 plant species out of total 60 species are being exploited for indigenous medicinal formulations. They are employed in various forms of medicinal recipes such as paste, infusion, juice, decoction, oil, sap, ash, powder, warmed plant parts like bark and leaves, etc. Formulation in the form of paste is more commonly used in their tradition. Infusion is the next in order and others forms of recipes are administered occasionally to rarely.

They combat various human afflictions such as diarrhea, dysentery, cough, jaundice, scabies, general body-ache, tooth-ache, head-ache, finger-joint ache, nail-ache, shoulder-ache, omitting, injuries, wounds, chest-pain, etc. They also treat post-delivery complaints, hair-fall, pimples, thorn-removal from foot sole, complaints regarding lactation and urination, etc.

There are certain health complaints which can not be considered as diseases, for example, post-delivery body swelling, lactation, general body weakness especially undernourished children. These are also evident in healthcare practices.

Ethnomedicinal research offers wide scope and great opportunities for the development of new drugs. Several well-known drugs have been obtained through folklore and traditional systems of medicine. Scientific evaluation of ethnomedicine requires chemical and pharmacological screenings, besides studies on biological activities and clinical trials. The claims presented in this paper can be verified on these grounds. Their scientific examination may reveal new or alternative sources of medicine.

Apart from medicinal utility, few plant species find place in their beauty-care e.g. treating pimples, hair-fall, removing dandruff, etc. It does mean that

although these tribal *vis-à-vis* rural communities are conceived backwards, they are also beauty-conscious.

Tribal and rural communities are basically agrarian and hence depend on staple food sources like cereals, millets, pulses, etc. However, their land holdings sometimes do not suffice their daily needs and therefore they seek sources from wild plant species. They utilize certain fruits, seeds, tubers, leaves, etc. as supplementary food.

Every human society has generally their own indigenous technologies employable for their daily necessities of life. Tribal people in particular in this region employ certain plants to better their lives, for example, (i) use of plant parts as fish-poison, (ii) wine preparation, (iii) killing of fleas, etc. These practices certainly need further attention on scientific ground to testify their potentialities and application on larger scale.

Apart from concrete uses, some form of abstract relationships with the plant world is but natural instinct. Some plant species are also used during various worships and festivals e.g. *Bauhinaracemosa, Tamilnadiauliginosa, Eranthemumroseum, Cyathoclinepurpurea, Salmaliamalabarica*, etc.

While seeking attention towards potentialities of local plant species, the present authors could not remain aloof from destructive practices interfering bioresources in the region. On account of over-exploitation over several generations, few plant species are being depleted for various reasons, for example, (i) over collection of fruit of *Terminaliachebula*, (ii) removal of tubers on large scale of *Puerariatuberosa*, (iii) removal of inflorescence-axis of *Ensetesuperbum*, etc. These species need attention from conservation point of view in the area under study, otherwise, they will disappear from the scene.

Vernacular plant names although mentioned during floristic studies, they are not thought so important since they are not international in character. They have perforce been neglected in botanical investigations. The present authors also endeavored to study their philology whenever possible. The present account indicated that the vernacular plant names are based on medicinal utility, miscellaneous uses, nature or characteristics of fruits, presence of latex, thorns, resemblance with other plant organs or structures. These are certainly indicative of indepth observations of the local people on the plant species in their vicinity. Similar studies have been also on record [8-9, 11-12]. These authors regarded the vernacular plant names as the best guides to locate the plants. They also reveal man-plant relationships and perceptions of the ambient human communities. Vernacular names vary nation to nation and language to language and therefore a particular nation should have some regulation for their standardization. This will bring some uniformity in their use and help communicate in a better way the knowledge and experience of past or ancient human societies.

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