



REVIEW ARTICLE

ETHNOMEDICINAL PLANTS OF KOTIA HILLS OF VIZIANAGARAM DISTRICT, ANDHRA PRADESH, INDIA

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SUMMARY

An ethnomedicinal study was carried out on the tribals of Kotia Hills of Vizianagaram district, Andhra Pradesh, to document the plants used in various ailments. A total of 62 plant species belonging to 41 families were recorded. Majority of the plant species described in the present paper was used in the snakebite, diarrhoea, rheumatoid arthritis, bone fracture, asthma and malaria. Most of the herbal remedies were taken externally in the form of paste. All these plants and plant parts need to be evaluated through phyto and pharmacochemical investigations to discover their potentiality as drugs. There is an urgent need to explore and document the ethnomedicinal plants used by the tribals of Kotia Hills before such valuable knowledge vanishes.

Key words: Ethnomedicine, Ethnomedicinal plants, Kotia Hills tribes, Vizianagaram district

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1. Introduction

Medicinal plants have been playing an important role in the survival of the ethnic communities, who live in remote villages, hills and forests. Tribal people and ethnic races throughout the world have developed their own culture, customs, medicinal practices, etc. A large number of wild and cultivated plants are being used by them for the treatment of various ailments, thus a considerable amount of information on medicinal plants is available with these communities. The 500 tribal communities, belonging to 277 ethnic groups present perhaps the richest heritage of India. They account for about 7% of the population in India, which has a rich heritage of using medicinal plants. The knowledge of medicinal plants have been accumulated in the course of many centuries (Nadakarani 1954). Rigveda, which is one of the oldest books supplies curious information on the medicine *Charakasamhitha*, *Susruthasamhitha* were written by *Charaka* and *Susrutha* respectively during 400-500 AD (Meera 1998). Medicinal uses and preparation of 700 plant species are recorded in these volumes. Indo-Aryans who are the pioneers in the history of India have acquainted with a profound

knowledge on the plant based drugs and knew more than 1200 plant drugs along with their action and specific therapeutic applications. These plants have not been properly investigated earlier. Extensive ethnobotanical explorations were being conducted throughout India (Huirdrom 1991).

Although different workers have documented the uses of various medicinal plants from different parts of Andhra Pradesh (Hemadri *et al.*, 1987a, 1987b) information on ethnomedicine of Kotia Hills of Vizianagaram is unavailable. Very few literature was available on the herbal folk medicine of Vizianagaram (Hemadri & Venugopalachari 1998, Venkaiah 1998). The present study carried out on the Kotia Hills of Vizianagaram district is one such attempt to document the traditional knowledge of medicinal plants used by the tribals.

Study area

The Kotia Hills are disputed area between the governments of Andhra Pradesh and Orissa regarding the ownership. The Kotia Hills lies between 18° 26' 063" and 18° 55' 200" North latitudes and 83° 10' 426" and

83° 24' 764" East longitudes, the elevation of above the mean sea level ranges from 850m to 1615m. The Kotia Hills surrounded on the East by Srikakulam district, on the West and South by Visakhapatnam district, on South East by Parvathipuram Revenue Division and North-West by Koraput district of Orissa state. The tribal inhabitants of the study area mainly consist of Mannedora, Kondadora, Jatapu and Savara. The ethnomedicinal study was under taken with a view to find out the plants used by tribes of Kotia Hills in selected 27 pockets particularly to cure various ailments.

2. Methodology

Field survey was carried out during 2007-2009 to collect information on the medicinal uses of plants found in the Kotia Hills of Vizianagaram district, Andhra Pradesh. Routine methods of plant collection and herbarium techniques have been followed (Jain & Rao 1977). Ethnomedicinal usage of plants was gathered from the village chiefs, medicine men, local men and women using semi structured questionnaires. Local names, plant parts used and mode of administration were recorded. After documentation, the treatment pattern of various ailments was cross checked and confirmed. All the voucher specimens were studied and identified with the help of local floras (Gamble 1915-1936, Venkaiah 2004) and were deposited in the Herbarium of Department of Botany, Andhra University, Visakhapatnam.

3. Results and Discussion

Ethnomedicinal study on the tribals from the Kotiahills of the Vizianagaram district revealed usage of 62 plant species that were found to be distributed across 41 families and 61 genera. Among them 23 were herbs, 20 shrubs, 11 trees, and 8 climbers respectively. The most cited family was Lamiaceae(5 species) followed by

Apocyanaceae (4 species), Acanthaceae, Asclepiadaceae and Verbenaceae (3 species each). Information on plant species, local names, family, and dosage in their traditional methods of drug administration in different ailments has been presented (Table-1). The uses of aboveground plant parts for medicinal purposes were found to be higher (56.45%) than the underground (41.93%) plant parts. Leaf was the most widely used plant part accounting for 18 plant species in a total of 62 reported plants followed by root(16 species) and bark (13 species). The whole plant parts of *Pedaliium murex*, *Scoparia dulcis* and *Tribulus terrestris* were found to have a medicinal value.

The recorded medicinal plants were used in the treatment of various ailments such as asthma, diarrhoea, rheumatoid arthritis, diabetes, snakebite, malaria, jaundice, cough, cold, urinary disorders etc. Of 62 medicinal plants were reported to be used in curing about 32 different types of diseases, of which the highest number of plant species, nine was used for the treatment of snakebite, followed by five each for rheumatoid arthritis and diarrhea, four each for treating malaria, asthma, fever and bone fractures. Most of the herbal remedies were taken externally in the form of paste. The plant parts were crushed and made into paste for applications over the area of diseases. In some cases along with the plant parts a little amount of milk or ghee or honey was used. This addition might be to enhance the efficacy of herbal remedies or to make the remedy more palatable masking the undesirable taste when taken orally. The use of *Marselia quadrifolia* for treating insomnia was found to be new in this region and deserves further study to ascertain the medicinal properties. Venkaiah(1998) reported some ethnomedicinal plants from Vizianagaram district of Andhra Pradesh where he failed to include this *Marselia* species against insomnia disease.

Table – 1. Plants used ethnomedicinally by the Kotia Hills tribes of Vizianagaram district

S.No.	Scientific Name, Family and Local Name	Habit	Parts Used	Disease	Mode of Administration
1	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson var. <i>campanulatus</i> (Decne.) Sivadasan (Araceae) Sirikanda	Herb	Corm	Bone fracture	Corm paste mixed with lemon juice is applied on the affected part.
2.	<i>Andrographis paniculata</i> (Burm.f) Wall. ex. Nees (Acanthaceae) Nelavemu	Herb	Root and Leaf	Malaria	Three spoonfuls of root and leaf extract is given twice a day for 5 days
3.	<i>Azadirachta indica</i> Juss. (Meliaceae) Vepachettu	Tree	Leaf	Chickenpox	Leaf paste mixed with turmeric is applied on the affected areas twice a day.
4.	<i>Barleria strigosa</i> Willd. (Acanthaceae) Neelambaram	Shrub	Root	Tuberculosis	Root crushed with <i>Piper nigrum</i> and the juice extract is given two spoonfuls twice a day for 30 days.
5.	<i>Biophytum nervifolium</i> Thw. (Oxalidaceae) Pusphajalam	Herb	Leaf	Rheumatoid arthritis	Leaves are boiled in water and the decoction is taken for 45 days.
6.	<i>Buchanania lanzan</i> Spreng. (Anacardiaceae) Chinnamurli	Tree	Stem bark	Diarrhoea	Stem bark powdered with stem bark of <i>Syzygium cumini</i> powder is administered one spoonful twice a day for 3 days.
7.	<i>Byttneria herbacea</i> Roxb. (Sterculiaceae)	Herb	Root	Asthma	Root mixed with <i>Piper longum</i> , black pepper and <i>Trachyspermum ammi</i> in equal proportions are ground about 5g of this powder is given twice a day.
8.	<i>Calotropis procera</i> (Ait.) R. Br. (Asclepiadaceae) Thellajilledu	Shrub	Latex	Snakebite	One drop of latex allowed falling on the sand made into tablet form. One tablet is given orally immediately after snakebite.
9.	<i>Capparis zeylanica</i> L. (Capparidaceae) Aridonda	Shrub	Root bark	Tuberculosis	Root bark ground with <i>Piper nigrum</i> and made into pills is administered twice a day for 15 days.
10.	<i>Cassia occidentalis</i> L. (Caesalpiniaceae) Kasintha	Shrub	Leaf	Skin diseases	Leaf juice mixed with butter milk and applied on affected parts
11.	<i>Cissus quadrangularis</i> L. (Vitaceae) Nalleru	Shrub	Tender stem and Leaf	Fever	Tender stems and leaves crushed and the extract mixed with breast milk is administered in doses of half spoonful once a day for 3 days for infants.
12.	<i>Clerodendrum inerme</i> (L.) Gaertn. (Verbenaceae) Pisangi	Shrub	Leaf	Malaria	Leaf extract is administered once a day for 7 days.
13.	<i>Clitoria ternatea</i> L. (Fabaceae) Shankupushpam	Climber	Flower	Diabetes	Flower juice is given once a day for 30 days
14.	<i>Costus speciosus</i> (Koen.) Smith (Costaceae) Bogachikadumpa	Herb	Rhizome	Abortion	10 g of rhizome paste is given daily twice for 5 to 7 days.
15.	<i>Desmodium biarticulatum</i> (L.) F. V. Muell. (Fabaceae)	Herb	Leaf	Bone fracture	The plant paste is applied on the affected area as a plaster.
16.	<i>Diospyros melanoxylon</i> Roxb.	Tree	Leaf	Diarrhoea	Two spoonfuls of tender leaf

	(Ebenaceae) Thummika				juice is administered thrice a day for 5 days.
17.	<i>Entada pursaetha</i> DC. (Mimosaceae) Gillteega	Climber	Seed	Rheumatoid arthritis	Seed coat made into paste and applied for external cure.
18.	<i>Euphorbia hirta</i> L. (Euphorbiaceae) Pachabottumokka	Herb	Leaf	Rheumatoid arthritis	Leaves are warmed and bandaged over the affected part by applying castor oil.
19.	<i>Ficus racemosa</i> L. (Moraceae) Medichettu	Tree	Stem bark	Diarrhoea	Stem bark crushed with <i>Curcuma longa</i> extract is made and given orally once a day for one week.
20.	<i>Gloriosa superba</i> L. (Liliaceae) Adavinabhi	Herb	Leaf	Asthma	Leaf paste is heated and applied on the forehead and neck for one week.
21.	<i>Gmelina asiatica</i> L. (Verbenaceae) Chinnagummidu	Shrub	Root	Leprosy	Root pound with tuber of <i>Merua oblongifolia</i> and made into paste, one spoonful of the paste is administered with water for one month.
22.	<i>Gymnema sylvestre</i> (Retz.) Schult. (Asclepiadaceae) Podapatri	Climber	Root	Snake bite	Root pounded with roots of <i>Aristolochia indica</i> and <i>Rhinacanthus nasutus</i> . The paste is given along with infant's urine immediately.
23.	<i>Helicteris isora</i> L. (Sterculiaceae) Chamali	Shrub	Root	Snake bite	Root decoction is given orally immediately after the snake bite.
24.	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. (Apocynaceae) Palakodisa	Shrub	Stem bark	Asthma	One tea spoonful of bark powder is given orally till cure.
25.	<i>Hyptis suaveolens</i> (L.) Poit. (Lamiaceae) Seemathulasi	Shrub	Root	Fever	Root decoction is administered for curing fever.
26.	<i>Ixora pavetta</i> Andr. (Rubiaceae) Kolimichettu	Shrub	Stem bark	Jaundice	Two spoonfuls of stem bark extract is administered daily twice for 9 days.
27.	<i>Jatropha gossypifolia</i> L. (Euphorbiaceae) Seema Nepalam	Shrub	Root	Bone fracture	Root paste is plastered over the joints.
28.	<i>Justicia adhatoda</i> L. (Acanthaceae) Addasaram	Shrub	Leaf	Diarrhoea	One spoonful of the leaf extract is taken twice a day.
29.	<i>Kalanchoe pinnata</i> (Lam.) Pers. (Crassulaceae) Gallarapaku	Herb	Leaf	Cough and Diarrhoea	Single raw leaf is eaten per day with empty stomach in the morning for 7 days to cure cough. Two spoonfuls of leaf paste along with black pepper grains is administered daily twice for 3 days to diarrhoea
30.	<i>Litsea glutinosa</i> (Lour.) Robinson (Lauraceae) Pangiachina	Tree	Bark	Chest pain	Two spoonfuls of bark decoction is administered twice a day.
31.	<i>Leonotis nepetifolia</i> (L.) R. Br. (Lamiaceae) Ranabheri	Herb	Inflorescence	Breast pain	Ash of inflorescence is mixed with mustard oil applied on breast for post natal breast pain.
32.	<i>Lygodium flexuosum</i> (L.) Sw. (Lygodiaceae) Khorothi	Climber	Leaf	Jaundice	Leaf paste is applied all over the body for 7 days.
33.	<i>Madhuca indica</i> J. F. Gmel. (Sapotaceae) Ippa	Tree	Flower	Asthma	Five flowers are boiled in a glass of water until it is reduced to half and is administered orally once a

34.	<i>Marselia quadrifolia</i> L. (Marseliaceae) Ciklinthakura	Herb	Leaf	Insomnia	day. Leaves along with <i>Sesamum indicum</i> oil is fried and given orally day after day for 15 days.
35.	<i>Merremia gangetica</i> (L.) Cuf. (Convolvulaceae) Yelukacheviaku	Herb	Root	Snake bite	Root tubers are made into paste and applied over the bitten part immediately.
36.	<i>Mimosa pudica</i> L. (Mimosaceae) Attipatti	Herb	Leaf	Malaria	Leaf extract is given twice a day for 7 days
37.	<i>Naravelia zeylanica</i> (L.) DC. (Ranunculaceae) Pullabatchala	Climber	Leaf	Cold	2-3 drops leaf juice is poured into nostrils to get relief from cold.
38.	<i>Naringi crenulata</i> (Roxb.) Nicols.(Rutaceae) Torravelaga	Shrub	Fruit	Intestinal worms	5 ml of fruit juice is administered orally twice a day for 3 days.
39.	<i>Ocimum tenuiflorum</i> L. (Lamiaceae) Krishnatulasi	Shrub	Leaf	Fits	Leaves pound with leaves of <i>Vitex negundo</i> and the fresh juice extracted is administered along with honey 5 ml once a day for 10 days.
40.	<i>Orthosiphon rubicundus</i> (D.Don) Benth. (Lamiaceae) Nelatappidi	Herb	Root tubers	Piles	Tuberous roots ground to paste with the tubers of <i>Maeruva oblongifolia</i> and <i>Asparagus racemosus</i> . 2 spoonfuls of the paste along with water is administered once a day for 9 days.
41.	<i>Pedaliium murex</i> L. (Pedaliaceae) Enugupalleru	Herb	Whole plant	Gonorrhoea	Whole plant is ground into paste mixed in water then filtered; the filtrate is given with sugar in 2 spoonfuls twice a day for 15 days.
42.	<i>Pogostemon benghalensis</i> (Burm.f.) O. Ktze. (Lamiaceae) Kokala	Herb	Leaf	Fever	Leaf juice is administered for fever.
43.	<i>Rauvolfia serpentina</i> (L.) Benth. (Apocynaceae) Sarpagandha	Herb	Root	Snake bite	Roots crushed with the leaves of <i>Kalanchoe pinnata</i> , the extract is given orally and the paste is applied over the bitten spot
44.	<i>Rauvolfia tetraphylla</i> L. (Apocynaceae) Papitaku.	Shrub	Root bark	Blood pressure	6 ml decoction of root bark is given daily once for 7 days.
45.	<i>Rivea hypocrateriformis</i> (Desr.) Choisy (Convolvulaceae) Bodditeega	Shrub	Root	Rheumatoid arthritis	Root paste is applied externally over the affected area.
46.	<i>Saraca asoca</i> (Roxb.) de Wilde. (Caesalpiniaceae) Asoka	Tree	Flower	Syphilis	Flowers pounded into powder and are applied over the affected areas.
47.	<i>Schleichera oleosa</i> (Lour.) Oken (Sapindaceae) Pusugu	Tree	Root bark	Snake bite	Root bark extract is given orally 2 spoonfuls daily thrice, paste applied over the bitten spot.
48.	<i>Scoparia dulcis</i> L. (Scrophulariaceae) Ghodthulasi	Herb	Whole plant	Fever	Two spoonfuls of plant juice is administered daily thrice for 3 days.
49.	<i>Solanum surattense</i> Burm.f. (Solanaceae) Verumulaka	Shrub	Root bark	Jaundice	Root bark pound with stem bark of <i>Moringa oleifera</i> , paste given orally twice a day for 2 days.

50.	<i>Strychnos nux-vomica</i> L. (Loganiaceae) Mushidi	Tree	Stem bark	Dysentery	Stem bark extract is given with honey daily twice for 2 days.
51.	<i>Terminalia arjuna</i> (DC.) Wt. & Arn.(Combretaceae) Tellamaddi	Tree	Stem bark	Diabetes	Stem bark decoction is administered along with sugar twice a day for diabetes.
52.	<i>Thespesia lampas</i> (Cav.) Dalz. & Gibbs. (Malvaceae) Adavi benda	Shrub	Seed	Tuberculosis	Seed powder with bark juice of <i>Schleichera oleosa</i> is administered orally in doses of one spoonful twice a day with hot water for 21 days.
53.	<i>Toddalia asiatica</i> (L.) Lam. (Rutaceae) Kondakasinth	Climber	Root bark	Mad dog bite	Root bark is given immediately after bite.
54.	<i>Tribulus terrestris</i> L. (Zygophyllaceae) Palleru	Herb	Whole plant	Urinary disorders	Whole plant is powdered and the powder is dissolved in 50 ml of water, after some time it is filtered and the filtrate is administered in doses of 15 ml thrice a day for 3 days.
55.	<i>Drimys indica</i> (Roxb.) Jussop (Liliaceae) Adavivulli	Herb	Bulb	Snake bite	Half of the bulb is ground with 10 black pepper fruits in 50 g of pure ghee and is given orally 3 doses within a day.
56.	<i>Vernonia cinerea</i> (L.) Less. (Asteraceae) Sahadevi	Herb	Root	Malaria	Spoonful of root decoction mixed with 2 black pepper fruits is given once a day for 6 days.
57.	<i>Vetiveria zizanioides</i> (L.) Nash (Poaceae) Vattiveru	Herb	Root	Allergy	Roots ground with <i>Achyranthes aspera</i> is given once a day for 3 days
58.	<i>Vitex negundo</i> L. (Verbenaceae) Vavilli	Shrub	Leaf	Epilepsy	Leaves are made into paste and the paste is applied over the head.
59.	<i>Wattakaka volubilis</i> (L.f.) Stapf (Asclepiadaceae) Didipala	Climber	Root	Snake bite	Root extract is given immediately after the snake bite.
60.	<i>Wrightia arborea</i> (Dennst.) Mabb. (Apocynaceae) Adavi ankudu	Tree	Root bark	Snake bite	Root bark and the latex tide above the bitten spot immediately.
61.	<i>Zingiber roseum</i> (Roxb.) Roscoe (Zingiberaceae) Adavi allamu	Herb	Rhizome	Rheumatoid arthritis	The paste of rhizome is taken orally twice a day for 15 days.
62.	<i>Zizyphus oenoplia</i> (L.) Mill. (Rhamnaceae) Parimi	Climber	Root	Herpes	Root made into paste and is administered orally along with ghee for 6 days.

4. Conclusion

The plants and the remedies as recorded here need phytochemical and pharmacological screening for their active principles and clinical trails for therapeutic action. Documentation of these medicinal plants used by the tribals of Kotia Hills in Vizianagaram district is the first hand report which shows that these people are still so much dependent on local vegetation for their health care. Unless such reports are

documented, the knowledge will be lost along with the old people of the tribes.

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