Ethnobotanical survey of medicinal plants from Thane district of Maharashtra, India

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Abstract
Ethnobotanical study deals with the direct traditional and natural relationship between human and plants. An ethno-botanical survey was carried out in some part of Thane district to procure endogenous knowledge from local and tribal people about their medicinal uses. The indigenous knowledge of aborigine people was documented through questionnaires. Plants were identified and arranged as botanical name, family name, local name, useful part and formulation used to cure ailments. A total of 30 medicinal plants species, distributed in 28 families were recorded. Of these 10 species, (33.33%) mainly trees; 53.33% were herbaceous and 13.33% climbers. The most frequently employed plant parts were leaves (40 %), followed by stem (23.33%) and fruit (16.66%). They are being used to cure various common diseases like fever, wound healing, skin diseases, headache, cough, cold, burnt skin, dysentery, diabetes, scorpion bite, body pains, etc. Ethnobotanical information is useful for traditional medical practitioners and researcher in various field of the science as botany, chemistry, pharmacy etc; which may guide to formulate new potent drugs from plants. The plant about which have been information obtained so far should be conserved.

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1. Introduction

Ethnobotanical study deals with the direct traditional and natural relationship between human and plants. Ethnobotany is the first science that originated with the evaluation or existence of man on this planet. It playing important role in augmenting information about the plants grow and used by native or diverse ethnic communities. India is rich in ethnobotanical knowledge which is inherited from generation to generation among tribal people since ancient time. But the traditional knowledge system in India is rapidly neglecting and there is an urgent need to record all ethnobotanical information from the diverse ethnic communities before they completely lost the information as tribe is being exploited by modern societies and they are forbidden to use the natural resources. These people live close to the forest and dependent on the natural resources for their live hood. They utilize various plant parts like leaves, root, bark, seed and fruits, etc., to make themselves comfortable and healthy; prepare simple formulations either individual or in combinations of two or more plant resources, which are easily available.
Currently, ethnobotany has become increasingly valuable in the development of health care and conservation programs in different parts of the world. The total 4,20,000 flowering plants documented from throughout world; out of which more than 50,000 are used for medicinal purposes. In India, more than 43% of the total flowering plants are known for medicinal purpose (Sharma et al., 2012).

As per 2011 census, Thane is highest populated district of India. This is situated in the western part of India (Maharashtra state). It is coordinate 19°10'21" N 72°57'25" E between 18°42 N to 20°21 N latitude and 72° 45 E to 73° 48' E longitude. The climate of this district is humid and cooled; range of temperature is 17.5° C to 34.4° C. And annual rainfall is more than 25000 mm. This district is a home land of various tribal community followed by different indigenous ethnic groups and subgroups. More than 1.5 million people living are tribal such as Varali, Kokana, Mahadev Koli, K-Thakur, etc., of which Varali tribe are well known for their paintings throughout the world. Geographically Thane district cover an area 9,33,700 hectors of which 3,30,300 hector covered with various common and endanger plant species. These people use the plants according to their knowledge acquired by experience or taught by their ancestors and belief healing properties for various ailments, role in religious and social ceremonies which are manifested in their folk behavior. Thus indigenous community may guide directly or indirectly for preparation of new formulation of medicinal drugs in various form to treat different ailments.

Ethnobotanical survey has been carried out throughout the world (Yadhav and Verma, 2010; Meena et al., 2013; Sharma et al., 2012). Only some part of Thane district was selected for the study as Wada, Bhiwandi, Jawhar, Vikramgad, Mokhada and Dahanu. Most of the Tribal people are living in these tehsils except Bhiwandi. The people developed their own traditional ways of diagnosis and treating various diseases by trial and error basis; which fulfills their basic need from the nearby forest. According to WHO, about 80% population of world rely on traditional medicinal for their primary health care needs. These medicines have fewer side effects and men can get it easily from nature. By keeping in mind this survey has been carried out during 2013-14.

2. Objective of Research
To collect ethnobotanical knowledge from tribal and local medicinal practitioners from the study area. As the ethnobotanical knowledge is being lost due to urbanization and industrialization of the society and to develop strategies to conserve the indigenous and endanger plants species. It may help for formulation of new drugs.

3. Materials and Methods
Extensive field survey of ethanomedicinal plants had conducted in selected parts of Thane district during November 2013-March 14. It is part of Western Ghat known as one of the Hotspot in India. Information was documented through personal interaction, conversation, discussion during the extensive field visit with Vaidyas, locals’ traditional practitioners, aged men, women, local healers, aborigine people, etc. While ethnomedicinal plants were collected and correctly identified by referring standard literature (Almeida, 2003; Naik, 2004). The information regarding identification, local name, useful parts, methodology of preparation of formulation, mode of administration and time of collection were also recorded and documented.

4. Results and Discussion
Ethnomedicinal plants were correctly identified and arranged as botanical name, family name, local name, useful part and formulation used to cure various ailments.

1. **Azadirachta indica**
   Family: Meliaceae  
   Local name: Kadunimb  
   Part used: Leaves  
   Leaves paste used externally to cure wounds. It is also used to cure skin diseases.

2. **Magnifera indica** L.  
   Family: Anacardiaceae  
   Local name: Amba  
   Part used: Stem  
   Stem paste mixed with sugar and salt to cure Jaundice.

3. **Plumeria rubra** L.  
   Family: Apocynaceae  
   Local name: Khurchapha  
   Part used: Flower  
   Flower juice mixed with coconut oil in 1:4 ratio and used externally on the body to reduce body temperature (fever).
4. **Colocasia esculenta**  
Family: Araceae  
Local name: Alu  
Part used: Stem, leaves and roots  
Roots paste externally applied on the part where cateress has occurred.

5. **Calotropis procera** (Ait) R.Br.  
Family: Asclepiadaceae  
Local name: Rui  
Part used: Leaves and flowers  
The dried leaves powder inhaled through nose for headache. Flower powder used to treat cough and cold.

6. **Bambusa arundinacea** (Retz) Wild  
Family: Bambusaceae  
Local name: Bambu  
Part used: Seeds  
Seed powder mixed in hot water and gives to drink to cure kidney stone.

7. **Terminalia alata** Heyne ex Roth  
Family: Combretaceae  
Local name: Aain  
Part used: Stem  
Powder of dried stem peel used to cure wounds.

8. **Althagi pseudalhagi** (M.Bield) Pesv.  
Family: Fabaceae /Papilionaceae  
Local name: Jawasi/Jaw  
Part used: Seed  
Seeds powder (1 g) mixed with vegetable oil (ghee) and it give to drink with water to the burnt patient. Burnt seed powder mixed in oil and paste on burn skin.

9. **Colesus amboiruacus** Leur (Syn. C. aromaticus Benth.)  
Family: Lamiaceae  
Local name: Panancha owa  
Part used: Seed  
Seeds are eaten in case of stomach, acidity and gas. Seeds are ace shed into paste and applied externally on stomach of children's.

10. **Aloe vera**  
Family: Liliaceae  
Local name: Korfad  
Part used: Bulk of the leaves  
The leaf juice is used in blood purification and skin diseases. It can take orally or applied externally on skin; leaf bulk applied externally on burning skin.

11. **Hibiscus cannabinus**  
Family: Malvaceae  
Local name: Ambada  
Part used: Flowers  
Flowers juice (10 ml) mixed with sugar (50 g) and taken orally for seven day in acidity.

12. **Tinospora cordifolia**  
Family: Menispermaceae  
Local name: Gulvel  
Part used: Stem and leaves  
Stem juice and leaves warm with water and taken orally to cure fever.

13. **Ficus racemosa** L.  
Family: Moraceae  
Local name: Umbar  
Part used: Stem and fruit  
Stem juice give orally (4-5 drop) to stop stomach pain of children. Fruits are mixed with honey and taken orally to stop nose bleeding.

14. **Jasminum auriculatum** Vahi  
Family: Oleaceae  
Local name: Juie  
Part used: Leaves  
Leaves juice kept just for 5 min in mouth; after 5 min throw that juice out of mouth to cure dental problems.

15. **Cymbopogon citratus**  
Family: Poaceae  
Local name: Bel  
Part used: leaves  
Leaves paste externally used on wounds to heal it.

16. **Aegle marmelos**  
Family: Rutaceae  
Local name: Hadmodi  
Part used: Leaves  
Leaves paste apply on the place where the bon has fractured to join fracture bone.

17. **Viscum nepalense** Sperenge  
Family: Loranthaceae  
Local name: Ritha  
Part used: Fruit and Leaf  
Leaf juice applies on the body in case of paralysis. Fruits latter applies on the body
three times per day to reduce the body
temperature and to cure red rashes on the
body.

20. *Coccinia grandis* (L.)
Family: Cucurbitaceae
Local name: Tondali
Part used: Root, fruit and leaf
One tea spoon root juice take four times per
day for Diabetes. Dried 4 - 6 g leaf powder
takes orally per day for some day to cure
diabetes. Leaf juice used to cure wounds.

21. *Ocimum sanctum* L.
Family: Lamiaceae
Local name: Tulas
Part used: leaves
Basil and lemons leaves paste eat an empty
stomach in case of high blood pressure.

22. *Sesamum orientale* L.
Family: Pedaliaceae
Local name: Til
Part used: Seed
Sesamum oil and bishop’s weed normally
heated together and used directly in ear to
relief from ear paining.

23. *Alium cepa* L.
Family: Alliaceae
Local name: Kanda
Part used: Bulb
Juice mixed with Ginger juice and takes orally
to cure vomiting.

24. *Raphanus sativus* L.
Family: Brassicaceae
Local name: Mula
Part used: Leaves
Leaves juice mixed with sugar and drink at
early morning to prevent Jaundice.

25. *Carica papaya* L.
Family: Caricaceae
Local name: Papai
Part used: Fruit
Boiled papaya gives to eat to control
dysentery.

26. *Momordica charantia* L.
Family: Cucurbitaceae
Local name: Karale
Part used: Fruit
Fruit juice gives orally to prevent Diabetes.

27. *Cinnamomum veran* J.S. Presl.
Family: Lauraceae
Local name: Dalchini
Part used: Stem Bark
Bark of cinnamon gives to lick typhoid.

28. *Kalanachoe lanciniata* L.
Family: Crassulaceae
Local name: Panphuti
Part used: Leaves
Daily cheving of leaf at morning cure urinary
stone. Injured leaves places at burnt places to
cure burnt injuries and pain.

Family: Rhamanaceae
Local name: Bor
Part used: Leaf
Leaves powder used externally on the surface
of scorpion bite.

Family: Zingiberaceae
Local name: Aale
Part used: Rhizome
Small piece of ginger give orally for getting
relief from cough.

In the present study a total of 30 medicinal
plants species, distributed in 28 families of
recorded in which 23 were dicots and five
families of monocots plants are used to cure
various ailments. Of these 10 species,
(33.33%) mainly trees; 53.33% were
herbaceous and 13.33% climbers. The most
frequently employed plant parts were leaves
(40%), followed by stem (23.33%) and fruit
(16.66%). They are being used to cure various
common diseases like fever, wound healing,
skin diseases, headache, cough, cold, burnt
skin, dysentery, diabetes, scorpion bite,
different body pains, etc. The common
diseases are jaundice, fever, headache,
wound healing, diabetes, vomiting, skin
diseases, scorpion bite, asthma, cough, cold,
typhoid, night blindness, to stop bleeding,
cholera, piles, paralysis, hair problems, dental
problems, etc., even some plants are used to
treat genetic disorder like night blindness.
Generally juice or particular plant part extract
are used either individually or in combination
with other plant or products. The application of
crude juice or mixture is applying orally as well
as externally. Though allopathic medicine is
dominating in the current era of medical fields
but high class people are also intriguing
towards traditional medicines system due to
fewer side effects, chief, easily available in
their place and promising results.

Thane district is a home land of various tribal
community followed by different indigenous
ethnic groups and subgroups. More than 1.5
million people living are tribal such as Varali,
Kokana, Mahadev Koli, K-Thakur, etc., of
which Varali tribe are well known for their
paintings throughout the world. The study area comes under the Western Ghats is one of the hot spot in India. Hence the area is rich in flora, presence of large number of medicinal plants species and is a site for various indigenous knowledge. This survey showed that tribals and their inhabitants of the area have sound knowledge about the uses of medicinal plants available in the region. Normally, tribal people or local practitioners are very conservative about providing information because of their common belief that if they disclose the property of that plant to a person outside of their race then the property of the plant will be lost forever (Meena and Kumar, 2012). The transmission of this type of knowledge from generation to generation is now threatened in this region and tends towards disappearance. However, during the field visit information gathered from local practitioner, elderly women, birth attendants, shepherds and farmers.

Due to industrialization deforestation is being takes place; protection and cultivation of precious wild medicinal plants are need of time to steps for long time use as people are mostly dependent on the traditional healthcare system. Traditional beliefs in the area also have their own unintentional role in conservation and sustainable utilization of medicinal plants. Thus, efforts must be taken to protect these species with involvement of the local people in conservation aspects (Herberg, 1993). The ethnomedicinal information require further research such as pharmaceutical and phytochemical analysis in order to identify pure medicinal compound how these can be of practical advantage in medicine development.

Conclusion

Ethnobotanical research provides vital information regarding both past and present relationships between plants and the traditional societies. There are wide varieties of plants for day common ailments. The ethnomedicinal information require further research, while efficacy of various indigenous practices and folklore uses should be subjected to pharmaceutical and phytochemical investigations in order to identify pure compound how these can be of practical advantage in medicine development. The plant about which have been information obtained so far should be conserved. It will be beneficial to undertake ethnobotanical study of the whole region. This will ensure to find a lot of information covering the plant of medicinal value before some of the plant having medicinal value become extinct. Once discover and conserved this information can be utilized for welfare of human being.

Research Highlights

Ethnobotanical survey was carried out and 30 plant species documented which are being used by local tribal people for their day common ailment. Leaves are widely used. Ethnomedicinal plant should be conserved. Ethnomedicinal survey provides guideline for the formulation of new drugs.

Limitations

Tribal people or local practitioners are very conservative about providing information because of their common belief that if they disclose the property of that plant to a person outside of their race then the property of the plant will be lost forever. Hence all local practitioners are not ready to provide information regarding medicinal plants.

Recommendations

We should give assurance to local people about their information will not be disclose or not harmful to them in near future; or say you are providing these information for welfare of human being then some of them will agree to provide information. Otherwise they are not ready to share their knowledge.

Funding and Policy Aspects

All sector of the society should come forward for procuring the vital information inherited from generation to generation in tribal people and conservation of this wealth by providing financial support.

Author’s Contribution and Competing Interests

The vital and useful information was obtained which is beneficial to all sectors of the society as some disease can cure by applying simple formulation which is incorporated in the paper without spending money and time. Therefore this type of research is needed not only in this study area but whole nation wherever the people are rich in ethnobotanical knowledge.

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