



Ethnobotanical survey on folk medicinal plants of Igatpuri Tehsil, district Nasik, Maharashtra state

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Abstract

'Igatpuri' tehsil is 47KMs away from Nasik, near the 'Western Ghats of Maharashtra'. 'Igatpuri' has mix tribal population and this population is mostly relies on forest resources and livelihoods. Use of forest resources and forest products as a medicine is frequent. There dependency explored may plants as folk medicine. Field work was carried out in different regions of targeted area for the documentation of an ethnomedicinal plants. 51 angiosperm species were recorded, which were taxonomically classified under 27 families. In remote area of the tehsil, 80% medicinal need is fulfilled by direct use of folk medicinal plants. These plants are used to cure various ailments by tribal's of Igatpuri. But, since last few decades, the biodiversity of this area is disappearing at alarming rate. Our Traditional healers like Vaidu, Sadhu, Hakim, Baba was having excellent knowledge of use of regional indigenous plants species (ethnomedicinal plant species) than younger traditional new generation of Vaidu, Sadhu, Hakim and Babas. This indicates that the indigenous medicinal plant knowledge is declining day by day among the younger generation. This survey emphasis the urgent need of 'regional community-based' awareness and approach in conservation of indigenous regional flora or ethnomedicinal plants. Creating awareness among the local community as well as strategy makers is one of the most important task.

Keywords: ethnobotany, Igatpuri, in situ, ex-situ conservation

Introduction

John William Harshberger, was an American, formally designed the term "ethnobotany" in 1895, from 'ethno'-study of people and 'botany'-study of plants (Ulysses and et al, 2017) ^[19]. In recent years, the use of plants in traditional medicine has increased the interest in ethnobotanical studies throughout the world. Ethnobotany is defined as the study of past and present interaction of primitive human societies and the surrounding vegetation (Rao R. R., 1987, Shanley P., 2003) ^[16, 17]. It deals with the study and evaluation of plant-human relations in all phases and the effect of plant environment on human society. ethnobotany could help to elucidate the cultural position of the tribes that use plants for food, shelter, or clothing, and that such elucidation, in turn, could clarify the problem of distribution of plants.

Recent research in plant science has focused mainly on ethnomedicinal investigation to fulfil the increasing demand of herbal medicine as they have no side effects. Within the very rich, adverse floras of Indian subcontinent are to be found many plants having ethnomedicinal importance. In our country, plants with medicinal value are 17% out of the all angiospermic plants found i.e. 15000 species, reported by Jain (Jain 1968) ^[8]. The indigenous knowledge of medicinal plants useful for health purposes is a key cultural adaptation to having a successful life in local ecosystem (M. S. Kpodar, 2015, Urso V., 2016) ^[13, 21] Therefore, it is essential to investigate such plants from core area and unexplored regions and to collect the folk medicinal knowledge from the inhabitants.

Forest are the main components of earth hence they act as life supporting system. The Igatpuri forest is vegetationally very rich. It lies between 20N latitude & 74 E longitude of 599 mm above main sea level. The Igatpuri is extreme south- west & bounded on the north by part of Nasik Many of the plant species are endemic and rare to this region. The tehsil is mainly known as 'tribal tehsil'. The farmers possess small patches of land on the hill slopes, and at the foot of the hills. The plot at the foot of the hill is used to grow Paddy. The slightly higher patch of land is for Kharasani - an oil seed and the higher, very sloped plots are used in rotation for Nagli - Finger millet. The primary occupation is agriculture which is almost entirely monsoon dependent. Although the tribals of targeted area are forest dwellers, they mainly practice agriculture, the agricultural produce does not suffice their sustenance. Systematic cultural practices of such ethnomedicinal plants will help to improve economic status of the local community. Similarly, it will also reduce the pressure of over exploitation from their natural habitats. Biodiversity based cultural knowledge is declining day by day and this trend is observed in individual, family, community level globally, despite the importance of plant community or biodiversity is well known in developing and developed countries.

Materials and Methods

The study area of igatpuri forest is located in the western Ghats & surround by the highest peaks of sahyadri i.e. western Ghats. Exploration was carried out by an authors since 2015 to 2020 in the remote areas of tehsil. During exploration senior tribal men and women, medicine men from the different regions of tehsil were interviewed. Total 51 angiospermic species of ethnomedicinal importance appeared worth reporting. The data was verified in subsequent visits, voucher specimens of ethnomedicinal plants were collected and deposited in the herbarium. Collected plants and prepared herbarium specimens were identified by using different floras and keys. Information regarding family of plant, its botanical name, regional vernacular name, respective plant part(s) used, and traditionall ethnomedicinal uses for reported plants was collected from local 'Vaidus'. The plant families under study were arranged according to Bentham and Hooker's system of classification (Cook T, 1901, Almeida M R, 2003)^[3, 1].

Table 1: List with indigenous ethno-botanical plants with Botanical names, Vernacular name, plant part used and its uses from Igatpuri.

Sr. No.	SN	Family, Botanical name	Vernacular name, Habit	Plant part used	Ethnomedicinal uses.
I	1	Menispermaceae <i>Cissampelous pareira</i> (Buch. - Ham ex DC.)	Tanni vel Climber	Roots	The Bhil tribe uses the root extract in dysentery. It is used in hormonal imbalance, asthma, arthritis and menstrual problems.
	2	<i>Tinospora cordifolia</i> (Willd.) Miers	Gulvel Shrubby-climber	Roots	Concentrated extract is prepaid by using root powder and water mixture. In Fever, a 2-3 spoonful extract is given after, the above mixture by diluting it in a glass of water. For everyday fever decoction of stem is good remedy
II	3	Vitaceae <i>Cayratia trifolia</i> (L.)	Khandivel Climber	Roots	The roots are ground with black pepper, is applied to boils. The roots also has an astringent property.
III	4	Anacardiaceae <i>Semicarpus anacardium</i> L.	Bibba, Bhilava Tree	Fruits and seeds	In Indigestion fruit is eaten directly. Fruits and seeds are also used in the treatments of cough and piles. Oil extracted from seeds is used as a and it is used in treatment of scabies.
IV	5	Fabaceae <i>Abrus precatorius</i> L.	Gunj It is a Climber	Seeds or Entire Plant	Concentrated extract is prepared by boiling seeds in water and it is used as a blood purifier. It is administered for 3 to 4 weeks. Whole dried plants is roasted and its ash is applied on wounds.
	6	<i>Crotalaria pallida</i> Ait. Hort.	Jungli tag Herb	Seeds	Seed powder taken for birth control and abortion.
	7	<i>Mucuna pruriens</i> (L.) DC.	Kachqiri Climber	Fruits	Hairy tomentum removed from the fruits is homogenized in jiggery. It is given to children as wormicide.
	8	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Seeds and Bark	Powder is prepaed from bark and it is pasted on the wounds of animals. Seed oil used to cure skin diseases.
	9	<i>Psoralea corylifolia</i> L.	Bavchi Herb	Seeds	Seed after grinding i.e. in powder form used as a diuretic, laxative. In leprosy and inflamatory diseases seed powder pest is used.
	10	<i>Vigna vexillata</i> (L.) A. Rich in Sagru.	Jungli moog Climber	Whole plant	It is proved to be effective in joint disorders, arthritis, swellings in joints. As a hemostatic it also checks hemorrhaging.
V	11	Caesalpiaceae <i>Cassia tora</i> L.	Tarota Herb	Entire plant	Whole plant extract used to cure psoriasis.
	12	<i>Tamarindus indica</i> L.	Chinch Tree	Leaves, bark and fruits	A paste made from the leaves is used in treatment of inflammation. The dry, powdered bark is given to relieve gastric pain.

VI	13	Mimosaceae <i>Acacia nilotica</i> (L.) Willd	Babhul Tree	Leaves, gum and bark	The raw gum is obtained from the stem which has cooling, healing and astringent properties. Raw gum is also used the treatment of Diarrhea, dysentery and diabetes.
VII	14	Combretaceae <i>Terminalia arjuna</i> (Roxb. ex. DC.)	Arjun sadada	Bark	Bark of Arjun tree is astringent in nature. It is use in febrifuge, as a coolant and also used to as a cardiac stimulant.
	15	<i>Terminalia bellirica</i> Roxb.	Beheda	Fruits	The dried fruits of beheda tree are used in the fever and cough treatment. It is also used in the indigestion and leprosy treatment
	16	<i>Terminalia chebula</i> Retz.	Hirda	Fruits	Dried fruits are chewed, the resultant juice helps in curing cough.
VIII	17	Asteraceae <i>Eclipta prostrata</i> L.	Maka	All the parts of Plant	Extract of all parts of the plant is used in treatment of uterine hemorrhage and piles. It also promotes hair growth and improve function of liver.
IX	18	Plumbageniaceae <i>Plumbago xylanica</i> L.	Chitrak	Roots and leaves	Roots and leaves of chitrak is observed to be effective in the treatment of mental disorders, bronchitis, dysentery scabies, and intestinal troubles and itching.
X	19	Apocynaceae <i>Carrisa congesta</i> Wight.	Karwand	Roots and Fruits	Fruit is reported to be astringent. Root decoction is reported to be very effective in delivery pain reliever after childbirth. It is also helpful in the winter to apply on lips.
	20	<i>Holarrhena antidysenterica</i> (Heyne ex. Roth)	Pandrakuda (Shrub)	Seeds, roots and bark	Pandhrakuda roots and dried bark is used as a antidysentric drug. Seeds are also used in treatment of fever and cold.
	21	<i>Rauwolfia serpentine</i> (L.) Benth	Sarpaganda (Shrub)	Roots	It is used as sedative, antidepressant, antihypertensive and tonic.
	22	<i>Wrightia tinctoria</i> R. Br.	Kalakuda (Tree)	Bark and seeds	Bark and seeds are used in jaundice. Bark and curd mixed together are given
XI	23	Asclepiadaceae <i>Calotropis procera</i> (Ait.) R. Br.	Rui (Shrub)	Entire plant and latex	The latex is useful in the treatment of ringworms and skin diseases. Dry leaves are smoked to cure cough and asthma.
	24	<i>Cryptolepis buchanani</i> R. & S.	Kavali vel (Twining shrub)	Roots and latex	Goiter is reported to be treated by Latex is applied on goiter. Root pest is applied over bone fracture wrapped with bamboo pieces, paste also given orally.
	25	<i>Hemidesmus indicus</i> R. Br.	Anantmul Climber	Entire plant	Whole Anantmul plant is used in the treatment of fever, diabetes, cough and blood disorders. It is also used as diuretic and as tonic.
XII	26	Gentianaceae <i>Exacum bicolor</i> Roxb.	Udi chirayat Herb	Whole plant	Whole plant is used in treatment of inflammation, fever.
XIII	27	Boraginaceae <i>Trichodesma indicum</i> (L.) R. Br.	Chota kalpa Herb	Leaves	Chota kalpa is used in the treatment of inflammation, diarrhea, dysentery, many skin diseases. also in skin Problems and dyspepsia.
XIV	28	Solanaceae <i>Datura metel</i> L.	Dhotra Herb	Leaves, and seeds	Seeds are astringent, arcotic and intoxicant. The dried leaves are are smoked in the treatment of asthma and bronchitis.
	29	<i>Solanum xanthocarpum</i> Schard & Wendl	Bhui ringani (Herb)	Leaves	Fresh leaves extract is given in the case of respiratory disease and dropsy. It has also been reputed to be good for the treatment of gonorrhoea and snake bite.
XV	30	Srophulariaceae	Bam	Whole plant	In order to remove excess body heat, the

		<i>Bacopa monnieri</i> (L.) Pennell	(Herb)		plant extract is orally administered for seven days.
XVI	31	Acanthaceae <i>Carvia callosa</i> Nees.	Karvi (Shrub)	Leaves, Honey	Crushed Karvi leaves are used in the treatment of stomach disorders. Honey which is prepared by honeybees at the time of 'Karvi' flowering is reported to be a very effective in cardiac problems.
	32	<i>Justicia procumbens</i> L.	Pittapapada Shrub	Leaves	It is used as an alterative, xpectorant and is given in asthma treatment. coughs, and rheumatism. The leaves juice is squeezed into the eyes in cases of ophthalmic.
XVII	33	Verbenaceae <i>Clerodendrum serratum</i> (L.) Moon	Bharangi Shrub	Leaves and roots	It is useful to cure chronic skin diseases, cough, asthma, bronchitis and leprosy. Leaves can be used in headache.
XVIII	34	<i>Vitex negundo</i> L.	Nirgudi (Shrub)	Leaves and branches	In Fever: Fresh leaf juice is prepared with water and some added sugar. A spoon of that juice is given orally twicw a day to the patent. A branch can be used as a toothbrush.
XIX	35	Lamiaceae <i>Leucas aspera</i> (Willd.) Spr.	Tamba (Shrub)	Whole plant	Entire plant is used in treatment of skin diseases, arthritis, cough and ulcer.
XX	36	Nyctaginaceae <i>Boerhavia diffusa</i> L.	Ran ratala (Herb)	Roots	The tribes apply freshly crushed roots for healing wounds.
XXI	37	Amaranthaceae <i>Achyranthes aspera</i> L.	Agada (Herb)	Entire plant	Fresh leaf juice is prepared and drops are put in the nostrils to cure the headache. Root powder is use is used in dysentery.
	38	<i>Amaranthus spinosus</i> L.	Katemath (Herb)	Roots	Three Teaspoonful root juice is given to patient to treat diarrhea and dysentery.
	39	<i>Celosia argentea</i> L.	Rankurdu Herb	Seeds	Seeds are used to dissolve urinary stones.
XXII	40	Euphorbiaceae <i>Emblica officinalis</i> Gaerth.	Awala Tree	Fruits and bark	Bark and Fruit powder is used to make a juice which is used in stomach trouble Ripen fruits are consumed as blood purifier by tribes.
	41	<i>Euphorbia fusiformis</i> Buch.	Buishrid Herb	Root	Especially fresh root jice mixed with sugar is used to cure throat pain problems and reduce phlegm.
	42	<i>Jatropha curcas</i> L.	Chandra-jyothi Shrub	Seeds and Young twigs	In Gum disease, twig of plant used as a toothbrush The seed oil is used in I Muscular pain and body swelling seed oil is use for external application.
XXIII	43	Moraceae <i>Ficus recemosa</i> L.	Umber Tree	Leaves, latex and fruits	The leaves are astringent and use as a mouthwash for spongy gums. The latex of the stem is used in treatment of piles and diarrhea. Fruits are edible, astringent and carminative.
	44	<i>Ficus religiosa</i> Roxb.	Peepal Tree	Bark and fruits	Decoction of the bark is given to treat gonorrhoea and scabies. The fruits are used as laxative.
	45	<i>Ficus benghalensis</i> L.	Vad Tree	Latex	The latex of this plant is used to treat dysentery, diarrhea, piles, tooth decay and skin diseases.
XXIV	46	Orchidaceae <i>Aerides crispum</i> Lindl.	Vinchu Epiphytic herb	Seeds	Seed powder is applied on injuries.
XXV	47	Zingiberaceae <i>Curcuma pseudomontana</i> Grah.	Ranhalad, Shilandh Herb	Tubers	Tuber extract is used to cure jaundice. Tuber paste is applied on head for having cooling effect.
XXVI	48	Amaryllidaceae <i>Crinum defixum</i> L.	Kumbaya, Piyukand Herb	Bulbs and leaves	The freshly crushed bulbs are used for treatment of burns and swellings.

XXVII	49	Liliaceae <i>Asparagus racemosus</i> Willd	Shatavari Undershrub	Roots	The crushed roots are tied on body to reduce any kind of swelling.
	50	<i>Chlorophytum tuberosum</i> Roxb.	Safed musali Herb	Roots	The root extract is effective mainly on the urinary system and as considered to be diuretic in action.
	51	<i>Gloriosa superba</i> L.	Kal-lavi Herb	Roots and tubers	The roots are used in snakebite. Tubers are used to promote labor pains.

Results and Discussion

Ethanobotanical study of Igatpuri tehsil reveals remarkable folk medicinal plant knowledge and related practices for the preparation of herbal medicines. Total no of 51 ethnomedicinal local regional plants were reported belonging to 27 families. Local names, plant part used and its preparation methods also documented, are being shown in the table to 1.

Our Traditional healers like Vaidu, Sadhu, Hakim, Baba was having excellent knowledge of use of regional indigenous plants species (ethnomedicinal plant species) than younger traditional new generation of Vaidu, Sadhu, Hakim and Babas. This indicates that the indigenous medicinal plant knowledge is declining day by day among the younger generation. As modernization is increasing it is noted that, as modernization and socialization increases the cultural and folk local regional medicinal plant knowledge is decreasing (Cox PA, 2000, Lee RA, 2001, Shanley P, 2003, Case RJ, 2005) [4, 12, 2, 17]. Hamilton said that as we know that, in these days peoples are facing the consequences of penetration of chemical compounds in our daily life, peoples are now agree to use the products of organic origin or herbal origin. But as this trend is increasing indigenous local peoples knowledge about the ethnobotany is decreasing day by day (Hamilton, 2004) [5].

Traditional indigenous medicinal plant knowledge is not documented yet. It is necessary to document the traditional medicinal plant knowledge well. Also it should be implemented in the education system. Or we have to design the system that, there should be no loss in the traditional indigenous medicinal plant knowledge while its inheritance from generation to generation. Results also revealed that this traditional indigenous medicinal plant knowledge is transferred from traditional healers to next generations by oral system only. Such transfer of knowledge is prone to loss or vanish when any knowledgeable elder die before the knowledge is transferred to his son or daughter.

But we cannot ignore the contribution of these traditional healers and surrounding local communities or local tribes which are totally or partially depends on the forest and forest product, that these peoples are the real custodians that safeguard the medicinal plants till now. Still overgrazing, habitat loss and alteration, deforestation, over exploitation of the medicinal plants for illegal trade is responsible for the reduction of availability of ethnobotanical health of Igatpuri. In-situ as well as Ex-situ conservation practices are needed. There is a greater need of a 'community-based' approach in conservation. Awareness among the local community is one of the most important tasks.

In the treatment of various ailments, different plant parts or sometime whole plant can be used by traditional healers. So, there is a great need of ex-situ and in-situ conservation, on the other hand, preservation of traditional ethno-medicinal-botanic knowledge is highly needed. Local healers of targeted area should be encouraged and given support time to time. In addition, wild plants are a source of income and employment particularly in the rural areas (J. B. Balick, 1996, J. Pascaline M, 2011) [6, 7].

(**Note:** Though all these plant species proved infallible on various ailments, their direct consumption or application should be avoided. Especially *G. superba* L. is highly poisonous, as it contains extremely toxic alkaloid, *Colchicine*. For obtaining good results these plants can be used as directed by the reliable traditional healers.)

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