



Ethno Botanical Study on Medicinal Plants Used in The Treatment of Snake-Bite From Raigad District of Maharashtra State, India

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ABSTRACT

The present paper deals with the ethno botanical studies on medicinal plants used in the treatment of snake bite by tribal people from the Raigad district of Maharashtra State. During the present study it has been found that 10 plants belonging to 8 families have been widely used by tribal people in the district on the treatment of snake-bite.

KEY WORDS: Tribal, Raigad, Ethno botany, Snake-bite

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INTRODUCTION

Raigad district in the state of Maharashtra lies between 17°51' - 19°80' N latitude and 72°51' - 73°40' E longitude. It covers an area of 7162 sq. km. The district is bounded on the west by Arabian sea, Thane district lies to the north, Pune district to the east, Ratnagiri district to the south while Satara district shares a boundary in south-east. Raigad district forms an important part of the traditional Konkan region. There are several hill ranges stretching out from the main Sahyadri range which runs almost parallel to the west coast. On the north-east boundary of the district, the Sahyadri range is crossed by several passes or ghats. Interesting forest vegetation is reflected due to varied physiological, geological, edaphic and climatic conditions.

Number of rivers and streams originate in the Sahyadri and flow towards the Arabian sea. The major rivers in the district are Ulhas, Patalganga and Amba in the northern part, Kundalika in central part and Savitri and Kalin the southern part. River Ulhas flows 21 kms in the district and enters in the region of Thane district. The district has 240 km long sea coast and has Bagmandala, Dighi (Shreevardhan), Revdanda and Revas (Alibag), Mora and Nhava-sheva (Uran) ports. Nhava-sheva is the most advanced port in India.

Raigad district consist of dark coloured volcanic lava flows and laterites. On plateau, basalt lava forms dominant 'Basaltic composition'. Next to that is a little softer, purple to grayish, usually showing rounded or elongated or tubular cavities and geode with infillings of secondary mineral occupying the portion of slopes and valleys.

Soil in the district is Murum, grayish to dirty green in colour which on decomposition gives reddish-brown to black soil. Rice soil and coastal alluvial soils are also present.

Alibag and Bhira are two places in the district having regional observatories of India Meteorological Department. Summer season is from March to May followed by south-west monsoon from June to October and November to February is cold season. The average annual rainfall of the district is 3110 mm (2010). The maximum temperature recorded is 35.7°C in the month of April and minimum temperature recorded is 12°C in the month of January. April and May are the hottest months while December and January are coldest months.

Varied physiographical, geological, climatic and edaphic conditions are reflected in diverse vegetation types. A total of 2864 sq. km. area in the district is under forests. Forests in the district are classified [3, 4] as:

Mhatre and Shinde

1. Tropical semi-evergreen to evergreen forests.
2. Tropical moist deciduous forests.
3. Tropical dry deciduous forests
4. Littoral and Swamp forest : a) Riparian b) Mangrove

Tropical semi-evergreen to evergreen forest type is mainly found in hilly regions and Ghats, particularly in Matheran (Karjattaluka), Kankeshwar (Alibagtaluka), Mirya Dongar (Pen taluka), Varandha Ghat (Mahad taluka) and Phansad Wildlife Sanctuary (Murud taluka). Tropical moist deciduous forests covers the major part of the district and are usually found on hill slopes, plains and valleys. Tropical dry deciduous forests are found in Rohataluka. Riparian vegetation is found along river banks and lakes, while mangrove forest is found along muddy sea-shores and creeks.

There are three types of tribal communities in the district:

1. Katkari or Kathodi
2. Thakar or Thakurs
3. Mahadeo Koli

The Katkari or Kathodi lives in the mountain range of Sahyadris. Their name is derived from their occupation of preparing "Katha" from "Khair" trees. Katkari are agricultural labors and firewood sellers. They are dark complexioned, sturdy in their physique and are hot-tempered by nature. Katkari women are hardworking and help their men by carrying head loads of firewood. They eat field rats, squirrels, peacocks, fish, various types of roots, nachani, vari etc. The tribe is divided into 4 endogamous sub-groups viz. i) DhorKatkari ii) Dhor Kathodi iii) Son Katkari iv) Son Kathodi. Out of these four sub-groups, Son Katkari are superior among all and are mainly found in Raigad district. DhorKatkari are not found in Raigad district. Katkari lives in huts which are mud-daubed with a roof of palm leaves. In their hut, generally the cooking room is separate. They have several hens, dogs and few fishery traps [9].

Thakar or Thakur also lives in Sahyadri mountain range. The hutment of Thakar or Thakur is known as Thakurwadi. These houses are built at some distance from each other. These houses are rectangular in shape and has only one pillar at the middle. Wall are made up of sticks of Karvi (*Strobilanthes callosus* Nees) and plastered with dung. People in this community are firewood sellers, honey sellers and agricultural labors. Thakar are normally of medium height and are less angry.

Mahadeo Koli is the third tribe found in the district. It has less population as compared to Katkari and Thakar. Mahadeo Koli are dark complexioned people and earned their livelihood from agriculture, animal husbandry etc.

MATERIALS AND METHODS:

STUDY AREA MAP:



a) Literature Survey:

Literature survey on different aspects has been carried out in various institutions such as Blatter Herbarium (Mumbai), Bombay Natural History Society (Mumbai), Botanical Survey of India (Pune) and

Agharkar Research Institute (Pune). The literature includes ancient as well as modern literature available. Websites such as www.biodiversitylibrary.org and www.botanicus.org have also been referred.

b) Interviews with forest officials, local inhabitants and tribal community:

Number of forest officials, forest guards, forest majdurs, local people, tribal, vaidus, hakims, Mid-wife, traditional healers have been interviewed regarding the uses of plant they use in their day to day life. These interviews have been taken with the help of standard formats given by Jain [5] with modifications.

c) Field Survey:

Village Pali has been fixed as a head quarter for field survey as it is easily approachable and is the central place of the district. Necessary permissions have been taken from the Forest Department for the collection of plant specimens. Detailed program of field visits has been designed by discussing with forest officials and local people. Various forest localities, agricultural farms, tribal villages, sacred grooves have been visited regularly for the collection of plant specimens. For the collection of data on sacred grooves, standard format is used. Flowering and fruiting twigs of plant specimens have been collected as a voucher specimens. Global Positioning System (Garmin etrex Vista hcx) has been used to record coordinates of each plant. During field visits, digital images of plants have been taken to show habit, habitat, flower, fruit and other pre-diagnostic characters. Digital images of topography, tribal villages have also been recorded.

d) Herbarium Study

All the specimens collected from Raigad district by previous workers have been studied at Blatter herbarium - BLAT (Mumbai), Botanical Survey of India herbarium - BSI (Pune) and Agharkar Research Institute herbarium - AHMA (Pune) [1, 7, 8].

Plants collected during present study have been properly processed and herbarium sheets have been prepared as per the standard methods given by Jain and Rao [6] and Bridson and Forman [2]. Critical studies of collected plants have been done at Blatter Herbarium. Collected plants are identified with the help of standard floras and manuals. Correct identity of plant specimens has been confirmed by matching them with authenticated specimens at BLAT (Mumbai) and BSI (Pune). Nomenclature of all plants has been updated as per International Code of Nomenclature for algae, fungi and plants (Melbourne Code, 2011). Prepared herbarium specimens are incorporated in Blatter Herbarium.

e) DNA Isolation and Barcoding

For correct identification of few species having taxonomic discrepancies, a molecular approach has been followed. Genomic DNA of those species has been isolated by using CTAB method with modifications. Isolated DNA is processed through Polymerase Chain Reaction (PCR) with *rbcl* gene marker, Exosap, Cycle sequencing, Ethanol Precipitation and finally proceeded with barcoding. Sequence is analyzed with the help of different bioinformatics programs.

RESULTS AND DISCUSSION:

The present paper deals with the findings of 10 ethno medicinal plants used in the treatment of snake-bite by tribal people of the Raigad district of the Maharashtra State. Tribal people use these plants regularly for the treatment of various poisonous and non-poisonous snake bites. The traditional knowledge of these treatment is transferred from one generation to another generation and thus the tradition of ethno medicine is conserved.

Table 1-The list of the plants used against the snake bite is given in following table:

No.	Family	Plant Name	Common Name	Parts Used
1	Acanthaceae	<i>Eranthemumroseum</i> (Vahl) R. Br.	Dashmuli	Root
2	Apocynaceae	<i>Rauvolfiaserpentina</i> (L.) Benth. ex. Kurz.	Sarpagandha	Root and Flower
3	Aristolochiaceae	<i>Aristolochiaindica</i> L.	Sapsun	Root
4	Combretaceae	<i>Anogeissuslatifolia</i> (Roxb. ex DC.) Wall. exBedd.	Dhavada	Leaves
5	Euphorbiaceae	<i>Baliospermumsolanifolium</i> (Burm.) Suresh	Danti	Root and Seed
6	Euphorbiaceae	<i>Excoecariaagallocha</i> L.	Phungali	Sap
7	Euphorbiaceae	<i>Falconeriaainsignis</i> Royle	Sasana	Bark
8	Liliaceae	<i>Gloriosasuperba</i> L.	Watnakhi, Agnishikha	Root
9	Rutaceae	<i>Limoniaacidissima</i> L.	Kavath	Leaves
10	Solanaceae	<i>Daturainoxia</i> Mill.	Dhotra	Root

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