AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS USED IN SACRED GROVES OF AMBAJI FOREST, GUJARAT, INDIA.

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ABSTRACT

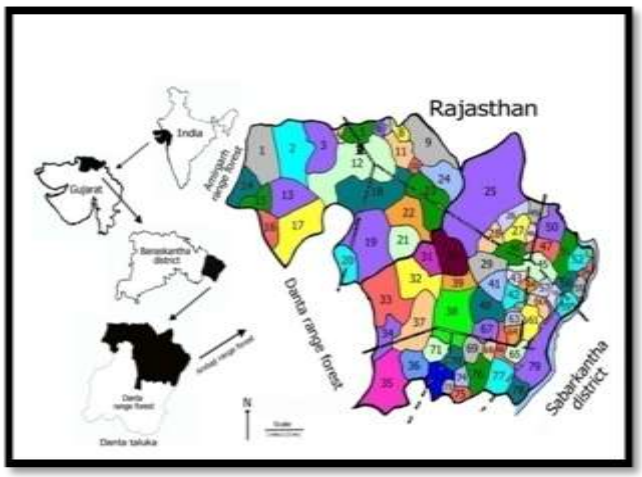
Gujarat is situated in the Central Western part of India, with an area of 1, 96,020 Sq. km. Ambaji range forest belonging to Banaskantha District. It is a part of Ambaji-Balaram wildlife sanctuary. Ambaji range forest is a part of Danta taluka of 300 sq. km. geographical area of the range. North Gujarat is following under Boswellia forest type[1]. The adivasi (local people) dwelling in the forest have good knowledge of herbal medicine. The term 'Ethnobotany' was first coined[2] encompasses entire studies concerning plants, which describe local people interaction with the natural environment. Its scope was much elaborated later. Present Ethnobotany links diverse disciplines such as anthropology, botany, linguistics, nutrition, ecology, conservation, economics and pharmacology, opening a wide field yet to enrich the human knowledge[3] Present paper deals with an ethnobotanical study of medicinal plants used in sacred groves like Babo Dev SGS: (Village-Meen), Khandor mata SGS (Village-Sebaliya), Mamaji SGS (Village -Chikhla), and Rakhevad Bavji SGS (Village-Halad) of ambaji forest are enumerated. The 31 plant species belonging to 25 families are gathered and explained its exact botanical name with family, local name and folk uses for number of diseases. These sacred groves are being protected for generations together to maintain the unique diversity, endemic, medicinal and useful valued species. Extensive field trips were carried out in the sacred grove at monthly intervals. Specimens of flowering plants were collected and identified with the aid of different regional floras.

Key Words: Medicinal Plants, Sacred Groves, Ambaji forest.

I. INTRODUCTION

Banaskantha, Sabarkantha, Mehsana and Patan are the four districts of North Gujarat, among them in Banaskantha district the Danta and Ambaji range forests are the part of Danta taluka having the part of Aravalli hills. Ambaji range forest is a part of Danta taluka situated on eastern part of the Banaskantha district in North Gujarat. Ambaji range forest is a part of Danta taluka situated on eastern part of the Banaskantha district in North Gujarat. These forests are inhabited by a variety of ethnic groups including the tribes like Bubadiya, Parghi, Taral, Bhemiyat, Dhrangi, Khair, Laur, Makwana, Dabhi, Solanki, Chauhan, Gamar, Parmar, Rohisa, Rathod, Mansi, Damor, Khermal, Kodarvi etc. These tribes cover 48 per cent of the total population. Out of 300 sq. km. geographical area of the range, about 542 sq. km is notified as Ambaji-Balaram wildlife sanctuary. The two main rivers Banas and Sabarmati and their tributaries are contributing to the enrichment of floral components. The average annual rainfall is about 725mm. Ambaji range forest is representing 434 angiosperm species (20% of the Gujarat flora) belonging to 85 families. The forest type is dry deciduous and scrub

(Champion and Seth, 1968) harbors about 400 tracheophyte plant species, including pteridophytes, gymnosperms and angiosperms. These forest areas are inhabited by around 20 tribes. The present investigation was carried out in Ambaji range forest of Banaskantha district of North Gujarat. Tribal people of Ambaji forest range directly depend upon forest resources for their daily needs. Tribal people of Ambaji forest range directly depend upon forest resources for their daily needs. The aim of Ethnobotany is to study how and why people use and conceptualize plants in their local environments. Plants have been used in the traditional healthcare from time immemorial, particularly among tribal communities[4]. Total 37 Plants species belonging to 26 families documenting of sacred groves and sacred plants of Jhalod and surrounding areas, Gujarat[5]. Sacred groves are one of the way to of the conservation of biodiversity. while trying to understand and document the indigenous knowledge of resource management practices. Collection and Removal of Any Material from the Sacred Groves is prohibited[6-7]. Sacred groves or sacred trees serve as a home for birds and mammals, and hence, they indirectly help in the conservation of living organisms[8] The Sacred groves found in different regions of India posses rich diversity of medicinal plants and provide suitable habitat for their sustainable, natural regeneration[9-11]. Protection of a large number of medicinal plants in sacred forests of different parts of India is some of the well documented by earlier studies[12-14]. It is also observed that more than 35,000 plant species are being used around the world for medicinal purposes[15]. The communities residing in these rich biodiversity areas have rich traditional wisdom of herbal medicines. Almost every village has a Bhuva (tantric/cosmic healers), a Bhagat (religios healers) or a Vaida (herbal healers) who are carriers of the traditional Knowledge. This is much evident from various studies and documentation undertaken in the past in the areas of ethno-botany, ethno-medicine\, tribal culture, livelihood, veterinary medicine etc[16-20].



Study Area Map

II. MATERIALS AND METHODS

The study area was surveyed regularly to record the floristic wealth of sacred grove of Ambaji forest areas. Various field trips were arranged and specimens were collected, identified with the help of Flora of the Presidency of Bombay[21] and Gujarat Flora[22] and properly processed through standard methods. Special note on the ethno botany were noted. Plant species were arranged according to Bentham and Hooker's classification given in the Gujarat Flora. Here documented 31 plant species were belonging to 29 genera and 25 families. Field notes with special reference to their distributional and regeneration status were noted. Followings are of

some important contributors worked on North Gujarat flora: Plants of North Gujarat and Floristic study of North Gujarat[23-25]

Data Collection From various Tribal People of Ambaji Forest, Gujarat during Different extensive fieldtrips (2012-2014)

Fig: A Babo Dev SG (Village Meen) Fig: B Khandor mata SG (Village Seba

Fig: C Mamaji SG (Village Chikhla) Fig: D Rakhevad Bavji SG (Village Halad)

Fig: E Preparation of Herbarium of Medicinal plants in KKSJ Lab. Ahmedabad, Gujarat

III. RESULTS AND DISCUSSION

Critical Observations from Study area:

The information about ethno botanical plants from the various Sacred groves and Sacred plants were collected from the tribal of this area. Fig: A to Fig:D Shows different groves at Ambaji forest Fig: E Shows Herbarium preparation in KKSJ Research lab., Ahmedabad, Plate 1 Shows Informators of different Sacred groves Table 1 Checklist of Sacred plants reported from certain Sacred groves. Table 2 Shows Dicot and Monocot ratio of the various ethno medicinal plants, Fig 1 Shows Dicot and Monocot ratio of the various Sacred plants, Table:3 Synoptic view of different plant species reported from the study areas Fig:2 Synoptic view of different plant species reported from the study areas

The Following are the Medicinal plants frequently found and used by the tribals of Ambaji forest.

1. ***Miliusa tomentosa* (Roxb.) Sinclair** [UMPH, UMBIYO]; Annonaceae
   - Fresh roots are tied at abdomen to cure tumors [Jivabhai].
2. ***Crateva nurvala* Buch.-Ham.** [VAYVARNO]; Capparaceae
   - Dried bark paste is applied twice a day on abscess [Somabhai].
3. ***Flacourtia indica* (Burm. f.) Merr.** [KANTI]; Flacourtiaceae
   - Few root pieces are boiled in water and applied on the poisonous animal bites [Somabhai].
4. ***Bombax ceiba* L.** [SIMLO, SAVAR]; Bombacaceae
   - About 100g of fresh inner bark is crushed into paste and applied on broken horn of cattle. It sets well in few days. [Nopabhai].
   - Fresh stem bark paste (paste is made by rubbing stem bark on a moist stone) and applied on skin diseases and pimples. [Somabhai].
5. ***Grewia hirsuta* Vahl.** [SISOTI[; Tiliaceae
   - A glassfull of stem extract is taken in the morning with empty stomach to join bones of human beings and cattles [Khemabhai].
6. ***Aegle marmelos* (L.) Coee.** [BILI]; Rutaceae
   - Boiled fresh leaves are applied for blood clotting [Arjanbhai].
   - Ripe fruits are edible and having medicinal properties [Shirmiben].
7. ***Boswellia serrata* Roxb.** [SALAD, DHUPELIO, GUGAL]; Burseraceae
   - Fresh leaves paste discrled water and bathing with this cures vomiting [Somabhai].
8. ***Azadirachta indica* A. Juss.** [NEEM, LIMDO]; Meliaceae
   - Inner bark is mixed with blackpepper, salt and water. The mixture is taken thrice a day to cure fever. [Arjanbhai].
9. ***Sapindus laurifolius* Vahl.** [ARITHU]; Sapindaceae
   - Boiled leaf juice is given to children for curing vomiting. Leaves are used as fodder [Devabhai].
   - About 50ml of fresh leaf juice is taken regularly to cure fever after delivery [Somabhai].

10. ***Mangifera indica* L.** [KERI, AMBO]; Anacardiaceae
    - Dried malformed inflorecence are powdered and given with water to animals, as a cure for swollen stomach [Somabhai].
11. ***Butea monosperma* (Lam.) Taub.** [KHAKHRO, KESUDO]; Papilionceae
    - About 250g fresh stem-bark is crushed with water and filterate is taken once in a day to cure diarrhoea [Somabhai].
12. ***Delonix elata* (L.) Gamble** [HINDRO, SANDSRO]; Caesalpiniaceae
    - Four to five leaves are crushed with water and paste is made it is applied on eyelids for removal of eye diseases [Somabhai].
13. ***Acacia nilotica* (L.) Del. subsp. *indica* (Bth.) Brenan** [BAVAL]; Mimosaceae
    - 100ml of stem bark decoction is taken once a day to cure stomach pain [Anabhai].
    - Leaf juice is given to cure sunstroke [Jivabhai].
14. ***Anogeissus latifolia* (Roxb.) Wall. ex Bedd.** [DHAVDO]; Combretaceae
    - Fifty grams of fresh stem bark is chewed regularly for curing cough [Jibvabhai].
15. ***Terminalia bellirica* (Gaern.) Roxb.** [BEHDR, BEHDA]; Combretaceae
    - About 5g of fruit powder is mixed with a glass of water and taken twice a day to cure sleeplessness. [Jivabhai].
16. ***Alangium salvifolium* (L. f.) Wang.** [ANKOLI, ANKOL]; Alangiaceae
    - About 100g fresh roots are rubbed with water and applied on the poisionous animal sting [Jivabhai].
17. ***Adina cordifolia (Roxb.)* Bth. & Hk. f. ex Brandis** [HALDU]; Rubiaceae
    - About 200g fresh stem bark is boiled in 400ml water, with sugar or honey. The mixture taken twice in a day to cure jaundice [Devabhai].
    - Five inch piece of fresh stem bark is crushed with water and applied on mumps [somabhai].
18. ***Diospyros melanoxylon* Roxb.** [TIBRU, TIMBRU]; Ebenaceae
    - Dried stem bark is smok is inhaled to cure Asthma [Somabhai].
19. ***Holarrhena antidysenterica* (L.) Wall ex G. Don** [KUDA, DOLA KUDA]; Apocynaceae
    - Fresh roots are crushed with water, a tea spoonfull of this filterate is taken once a day early in the mornnig cures diarrhoea [Nopabhai].
    - About 25g fresh roots are pounded with 100ml water and taken one spoonful as a for cure stomach pain [Nanabhai].
20. ***Cordia dichotoma* Forsk.** [VADGUNDO, MOTOGUNDO]; Boraginaceae
    - A glass of fresh leaf juice is taken thrice a day regularly to women as pain killer after delivery [Jivabhai].
21. ***Cordia gharaf* (Forsk.) F. N. Will** [GUNDI, NANI GUNDI]; Boraginaceae
    - A tea spoonfull of stem bark juice is given orally to cure dysentry [Somabhai].
    - About 50ml of leaf juice is given to cure dysentry.[Jivalabhai].
22. ***Tecomella undulata* (Sm.) Seem** [RAGAT ROHIDO]; Bignoniaceae
    - A teaspoonful of leaf juice is taken thrice a day to cure fever [Somabhai].

- A tea spoonful of flowers powder is taken thrice a day regularly to cure cancer [Karimbhai].

23. ***Clerodendrum multiflorum* (Burm. f) O . Ktze.** [ARNI]; Verbenaceae
    - About 100 gms fresh leaves or soft stem branches are crushed and poultice is made used to relieve eye pain [Jivabhai].
24. ***Lantana camara* L.** [DHANI DHARIYA]; Verbenaceae
    - Leaf paste is applied on animal ulcers [Devabhai].
25. ***Vitex negundo* L.** [NAGOD]; Verbenacaeae.
    - Leaf paste is applied on rheumatic swellings [Devabhai and Somabhai].
26. ***Euphorbia nerifolia* L.** [THOR]; Euphorbiaceae
    - Fresh leaf paste is applied on abscess [Arjanbhai].
27. ***Jatropha curcas* L.** [RATANJOT]; Euphorbiaceae
    - Lalex is applied to cure toothache [Jallobhai].
28. ***Ficus benghalensis* L.** [VAD, VALLO]; Moraceae
    - Yellow old leaves are steamed and applied on abdomen to cure stomach pain [Devabhai].
29. ***Ficus racemosa* L.** [UMARO]; Moraceae
    - Fresh latex is applied on tongue to cure cough [Somabhai].
30. ***Phoenix sylvestris* (L.) Roxb.** [KHAJURI]; Arecaceae
    - A teaspoonful of root juice is taken twice a day to cure stomach pain [Nopabhai].
31. ***Dendrocalamus strictus* Nees.** [LAKADI]; Poaceae
    - Young shoot paste is applied externally to stop bleeding [Somabhai].

Plate 1 Informators of the study area

Table 1 Checklist of Medicinal plants frequently reported from certain Sacred groves.

Sr no.	Botanical name	Local name	Family
1.	*Miliusa tomentosa* (Roxb.) Sinclair	UMPH, UMBIYO	Annonaceae
2.	*Crateva nurvala* Buch.-Ham.	VAYVARNO	Capparaceae
3.	*Flacourtia indica* (Burm. f.) Merr.	KANTI	Flacourtiaceae
4.	*Bombax ceiba* L.	SIMLO, SAVAR	Bombacaceae
5.	*Grewia hirsuta* Vahl.	SISOTI	Tiliaceae
6.	*Aegle marmelos* (L.) Coee.	BILI	Rutaceae
7.	*Boswellia serrata* Roxb.	SALAD, DHUPELIO, GUGAL	Burseraceae
8.	*Azadirachta indica* A. Juss.	NEEM, LIMDO	Meliaceae
9.	*Sapindus laurifolius* Vahl.	ARITHU	Sapindaceae
10.	*Mangifera indica* L.	KERI, AMBO	Anacardiaceae
11.	*Butea monosperma* (Lam.) Taub.	KHAKHRO, KESUDO	Fabaceae
12.	*Delonix elata* (L.) Gamble	HINDRO, SANDSRO	Caesalpiniaceae
13.	*Acacia nilotica* (L.) Del. subsp. indica (Bth.) Brenan	BAVAL	Mimosaceae
14.	*Anogeissus latifolia* (Roxb.) Wall. ex Bedd.	DHAVDO	Combretaceae
15.	*Terminalia bellirica* (Gaern.) Roxb.	BEHDR, BEHDA	Combretaceae
16.	*Alangium salvifolium* (L. f.) Wang.	ANKOLI, ANKOL	Alangiaceae
17.	*Adina cordifolia* (Roxb.) Bth. & Hk. f. ex Brandis	HALDU	Rubiaceae
18.	*Diospyros melanoxylon* Roxb.	TIBRU, TIMBRU	Ebenaceae
19.	*Holarrhena antidysenterica* (L.) Wall ex G. Don	KUDA, DOLA KUDA	Apocynaceae
20.	*Cordia dichotoma* Forsk.	VADGUNDO, MOTOGUNDO	Boraginaceae
21.	*Cordia gharaf* (Forsk.) F. N. Will	GUNDI, NANI GUNDI	Boraginaceae
22.	*Tecomella undulata* (Sm.) Seem	RAGAT ROHIDO	Bignoniaceae
23.	*Clerodendrum multiflorum* (Burm. f) O . Ktze.	ARNI	Verbenaceae
24.	*Lantana camara* L.	DHANI DHARIYA	Verbenaceae
25.	*Vitex negundo* L.	NAGOD	Verbenacaeae.

26.	*Euphorbia nerifolia* L.	THOR	Euphorbiaceae
27.	*Jatropha curcas* L.	RATANJOT]	Euphorbiaceae
28.	*Ficus benghalensis* L.	VAD, VALLO	Moraceae
29.	*Ficus racemosa* L.	UMARO	Moraceae
30.	*Phoenix sylvestris* (L.) Roxb.	KHAJURI	Arecaceae
31.	*Dendrocalamus strictus* Nees.	LAKADI	Poaceae

Table 2 Dicot and Monocot ratio of the various ethno medicinal Plants

Dicot	**29**
Monocot	**02**

Fig 1 Dicot and Monocot ratio of the various ethno medicinal Plants

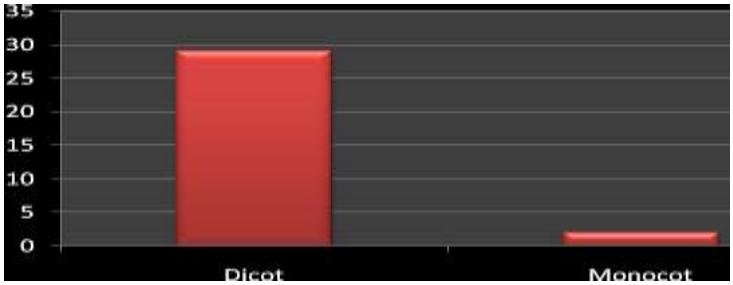


Table:3 Synoptic view of different plant species reported from the Study area

Species	**31**
Genus	**29**
Family	**25**

Fig:2 Synoptic view of different plant species reported from the Study area

IV. SUMMARY AND CONCLUSION

The range forest is having a series of Aravalli hills with dry deciduous scrub forests. *Butea monosperma, Holarrhena antidysenterica, Wrightia tinctoria, Lannea coromandelica, Boswellia serrata, Zizyphus mauritiana* etc are found mostly in hilly regions. Species like *Soymida febrifuga, Morinda tomentosa, Ougeinia oojeinensis, Hymenodictyon excelsum, Schrebera swietenioides, Oroxylum indicum, Tecomella undulata, Bridelia retusa* are found with restricted distribution. Out of these tree species, *Ougeinia oojeinensis* one of the potential medicinal species used for women delivery was found very rare. 4 species of pteridophytes are recorded in shady areas in the forest. Local inhabitants of the present study area are greatly dependent on the forest resources. It was observed that the tribal villagers were collecting fire wood from forest and selling in nearby towns. Habitat destruction due to grazing, logging, agriculture conversion of forest into land and road constructions is causing rapid disappearance of many floral components. Interviews conducted with local inhabitants during the study period showed ethnobotanical use of about 42 plant species by various tribal communities[26]. Some of the informators bio-data along with their photograph are also provided. Survey on ethnobotanical practice of the area showed a good number tree species have been used for the preparation of various agricultural implements, household implements, musical instruments etc. There is considerable decrease in use of plant resources through traditional way. Sometimes limited availability of phytowealth causing erosion of ethnobotanical practices. It is felt that further intensive ethnobotanical explorations are needed to bring out valuable information. Since the present study was mainly based on visual observation, further studies are necessary to document the potential medicinal plants both qualitatively and quantitatively.

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