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A Study on Medicinal Plants of the Aravalli District, North Gujarat

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***Abstract*: *Background:* Aravalli district, located in the northwestern part of Gujarat has an expansive floristic and ethnobotanical values. The tribal-rural people follow their own lifestyle, rich and diversified culture, tradition and belief systems. *Methods:* During 2018 - 2019, by making frequent field trips to the study area ethno botanical study was carried out to document about the medicinal plants used in folk traditional medicine practices by the residents of Aravalli district, Gujarat. During the frequent field trips, information on various medicinal plant species was collected from the native people. The mode of data collection was interview-based, with local residents like Bhagats, Vaidyas, priests, Shepherds and local tribal informants of the study region. *Results:* The investigations made in this study have shed light on the native plant species used by the people residing in Aravalli Districts and further scientific advanced research can be done to isolate the active pharmaceutical compounds which can be used in treating various types of medical ailments.**

***Keywords*: Aravalli Hills, Traditional medicines, Ethno medicinal plants, Folk Medicines, Gujarat.**

1. Introduction

About 8% of the overall species of the world's biodiversity is present in India. The use of Traditional medicinal practice dates back to 2000 years. India is home to various traditional medicine practices such as Siddha, Ayurveda, and Unani. Plant-based medicines and its derivatives are procured from ethno medicinal plants in the form of decoctions, dry powder, or other forms of plant extracts [V. Subhose et. al, 2005; Pan S-Y et al, 2015].

There are numerous research findings which reports the management of natural resources and sustainable use of traditional medicinal plants [Uprety Y, et al, 2012; Larsen HO, Olsen CS, 2007]. Several strategies like guidelines and recommendations have been set up in order to conserve the resources by instituting various systems for monitoring the status of the conservational practices to sustain natural resources [Hamilton AC, 2004]. As there is an increasingly inadequate supplies of natural food resources and medicines, sustained utilization of the wild resources from its natural habitats can be an effective alternative conservational practice. Colonization, Industrialization, deforestation and exploitation of the natural resources by depleting the natural resources in the forests and mountains have not only endangered the biodiversity but also the cultural values, ethno medicinal knowledge of the tribes living in that area. Therefore, there arises a need to preserve the ethnobotanical and ethno medicinal knowledge exhibited by the tribes belonging to the Aravalli district.

The Aravalli ranges, which run along the northern fringe of the Gujarat State, are located between 23° 3' and 24° 37' Northern latitudes and 72° 15' and 73° 39' Eastern longitudes [GPS, 2019]. The area under study covers the forests of Aravalli district of North Gujarat. The dense distribution of the forest type is composed mainly of the dry as well as Mixed Deciduous type of rick diversity of floral species. The selected domain/ areas of the villages is being situated alongside the North Eastern portion with densified region which is reserved as forest area by the government. People from tribal communities or those who live in the mountain ranges mostly depend on the local medicinal plants available in their region to treat their medical ailments as they don't have access to English medicines. According to reports of the World Health Organization (WHO), it is evaluated that roughly 80% of the people from developing nations depend only on the traditional medicinal practices for their minor ailments or health care [WHO, 2007]. About 25% of the allopathic medicines prescribed are produced from the wild medicinal plant species [Hamilton AC, 2004].

This study employs the qualitative method approach that focuses on understanding experiences and perceptions of ethnobotanists and study the cultural aspects, underlying faunal specificity and their underlying relationship with the tribal/ rural community and to study their approach with regards to their phytochemical attributes and scientific knowledge concerning the medicinal values imparted by the plant species in conglomeration. In the present study, the ethno medicinal uses of plants in Aravalli district of Gujarat in India were reported.

2. Materials and Methods

Prior to the survey, a meeting was organized with local authorities, village leaders, native residents, to explain them about the purpose of the study and we discussed about informed consent. We also obtained the signed consent from the participants before commencing the interview process.

We conducted a free-listing exercise with the above

mentioned categories of people and semi-structured interviews were conducted with the traditional practitioners also called as Vaidyas and Bhagats. They are known to have acquired with knowledge that has been achieved either in the oral or non-codified forms in the medical treatment of patients via the majority of elders from the family. We were able to procure precise information about the medicinal plants from the elderly vaidyas who are above the age of 60.

The ethnomedicinal uses of indigenous plants that are endowed and widespread in the Northern part of Gujarat region were also recorded. The plant specimens collected from the study area were discerned with the help of Flora of Gujarat state [Shah G L, 1978].

3. Observation

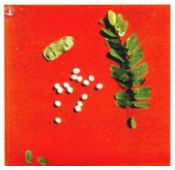
In the following listing of plant species, the scientific names of the observed plant species are listed in the alphabetical order with their family name and local Guajarati names mentioned in parentheses, followed by their medicinal uses.

1. *Abrus precatorius* L. (Family: Fabaceae; Local Name: Ratti)
   - The seeds of this plant were used in the treatment of diabetes and kidney ailments.
   - As a traditional medicine practice, it is used in the treatment of leucoderma and animal scratches and other forms of wounds caused by cats, mice and dogs. The The leaves are crushed with lime and used to treat acne sores, abscesses and boils by external application.
   - The decoction made out of roots and leaves are traditionally used in treating various disorders like bronchitis and asthma.
2. Ailanthus excelsa Roxb. (Family- Simaroubaceae; Local Name: Araduso)
   - The tree bark contains a bitter compound known as 'ailanic acid'. The bark extract is bitter in taste and its tonic is used as a carminative, febrifuge, abortifacient, antispasmodic and expectorant. Bark is pulverized and added with goat milk and is used as an anti-diarrheal agent.
   - Crushed leaves are used in treating mouth ulcers
   - Roasted leaves are bandaged on head to cure headache, gastralgia and tied onto the achy body parts to relieve the pain.
   - Roasted seeds are used in treating cough and colic pain. Infusion of stem bark is also used to cure cholera.
3. Alangium salvifolium (L.f.) (Family: Cornaceae; Local Name: Ankol)
   - The leaves of Cassia auriculata L. and Alangium salvifolium is crushed to make a paste and it is used as an anti-inflammatory agent to treat rheumatic pains.
   - The seed paste is used in hair regrowth on bald heads.
   - The decoction made out of its root bark is given to induce abortion in pregnant women.
   - The paste made out of its root bark is applied on wounds and ulcers as it has healing properties.
   - Juice extracted from this fruit is used to get relief from sunstroke.
4. *Bacopa monnieri* L. (Family: Scrophulariaceae; Local Name: Brahmi)
   - Juice obtained from leaves is used in treating epilepsy, nervous diseases like insanity.
   - It is used to treat aphonia, in enhancing memory power, to reduce fever, cough, fever, and asthma.
   - Whole fresh plant is used in the treatment of malaria.
   - The juice extracted from plants is mixed with castor oil to treat snakebites. The dried powder of the plant is added to cow's milk and is given orally to treat the same.
5. Balanites aegyptiaca L. (Family: Zygophyllaceae; Local Name: Hingua)
   - Ripe fruits of this tree species are used for treating skin diseases and whooping cough.
   - Seed oil is used for burns, freckles and for soap making
   - Pulp of ripe fruit is administered orally in patients with diarrhoea complaints.
   - Seed paste is obtained by rubbing it with water and applied externally on pimple.
   - Powder of stem bark mixed with curd and given internally to cure cholera
   - Stem bark along with Unripe fruits and leaves are crushed and add water then filtered this filtered syrup is given to children to kill intestinal parasites.
   - Roasted seeds are given in cough and colic.
   - Pulp of ripe fruits is also employed for treating obesity.
6. Bambusa arudinacea (Retz.) Wild (Family: Poaceae; Local Name: Toncor)
   - The juice of flowers is used as eardrops for earache and deafness.
   - The plant extract is used to treat inflammatory conditions.
   - Bark is used in treating skin eruptions and other skin ailments.
   - The root is burnt and its ashes are applied to treat conditions like bleeding gums, ringworm infections and inflammatory joints.
7. *Barleria cristata* L. (Family name: Acanthaceae; Local Name: Jhinti)
   - Whole plant is used as a traditional medicine in treating burns, wounds, gingivitis, inflammation, and diabetes.
   - It is traditionally used in treating cough, skin infections, anaemia and tuberculosis.
   - Leaves of this plant is used to ameliorate inflammations and also provides toothache relief.
   - The fresh juice of the plant is used in treating phlegm and fever, and the paste obtained from the leaves is used to prevent cracking in the foot sole during the rainy season.
   - Its root is used in treating cough and anaemia. On the other hand, root infusion is used to ameliorate swellings

in the tooth and mouth sores.

8. *Calotropis procera* Ait. R.Br. (Family: Asclepiadaceae; Local Name: Aakado)
   - The fresh tender roots of this plant is used as a toothbrush.
   - Root bark is ground to make a paste and applied on inflammations or its latex or mature leaves are warmed and tied with a cloth bandage to treat swellings in rheumatism.
   - For treating dry cough, the dried flowers are powdered and mixed with powdered black pepper (Piper nigrum L.) and mixed with jiggery and saltjuice to treat dry cough.
   - The juice of the root is applied drop by drop in the ears to cure sore ears and this root juice is also used in treating pain in the molar teeth.
   - The leaves are warmed and tied in the abdomen region to treat colic pains.
   - The root bark is dried and powdered to be taken internally for curing cough and asthma.
9. *Cassia fistula* L. (Family: Caesalpiniaceae Leguminosae; Local Name: Garmalo)
   - Bark and leaves contain tannin. Gum obtained from this plant is taken with water for treating diarrhea.
   - Ripe fruit-pulp contains sugar, tannin, gluten and gum. The fruits from this tree are cooked and eaten as a vegetable to cure fever hysteria and fever.
10. Crateva nurvula Buch-Ham (Family: Capparaceae; Local Name: Vayvarno)
    - Decoction of bark is given in treating conditions like calculus and other urinary affections
    - Juice of fresh leaves is given with milk in rheumatism.
    - The leaves are cooked and eaten as a vegetable which is known for curing of neuralgic pains, paralysis and chronic rheumatism.
    - Fresh Paste of leaves is applied on gouty swelling to relieve pain.
    - The stem bark and root boiled in castor oil and oil is used as an embrocation in case of chronic rheumatism.
    - The Juice from stem bark is used to treat burnt skin
11. *Datura metel* L. (Family: Solanaceae; Local Name: Dhaturo)
    - The fresh leaves are poulticed to treat rheumatic swelling of the joints.
    - Roasted leaves bandaged on the head to treat headaches.
    - Dry leaves smoked in pipe to cure asthma and bronchitis.
    - Stamens of flowers are given to avoid constipation.
    - Paste of burning seeds is used to treat toothache.
    - Whole plant has narcotic properties.
    - Juice of fresh leaves mixed with lime and added jaggery and mixture applied externally on mumps.
12. *Derris Indica* (Lam.) Bennet (Family: Fabaceae; Local Name: Karanja)
    - As it relieves toothache promptly, its twigs are used as toothbrush.
    - Seed oil is used in treating skin diseases by mixing it with lemon juice and applied on scalp to cure dandruff.
    - Fresh leaves juice is applied on eczema.
    - Roasted seeds are eaten to stop vomiting.
    - Powdered seeds are given ill fevers, rheumatism, and sluggish liver.
    - Decoction of leaves is given to treat various conditions like rheumatism, diarrhoea and cough.
    - Decoction of stem bark is given to control bleeding in piles.
    - Flowers are taken as an anti-diabetic medicine.
13. *Echinops echinatus* Roxb. (Family: Asteraceae; Local Name: Utkanto)
    - The root infusion is given to animal to cure flatulence.
    - The root decoction is given in treating conditions like cough, fever and sexual debility.
    - The root paste is applied on to bite marks of any poisonous reptile bite.
14. *Emblica officinalis* Gaertn. (Family: Euphorbiaceae; Local Name: Amla)
    - Fruits have a rich source of vitamin C. Juice of fruit is mixed with sugar and given orally on burning urination trouble.
    - Infusion of seed mixed with powdered bark of 'jambu' (Syzygium cumini) and given orally in treatment of diabetes.
    - Its bark contains tannins and the decoction obtained from the bark and leaves is used as a mouthwash in treating infections in the throat and to relieve toothache.
    - Fruits are used as an aphrodisiac, stomachic, mild laxative and carminative agent.
15. *Moringa concanensis* (Family: Moringaceae; Local Name: Saragavo)
    - Juice obtained from the leaves of moringa is given to reduce body weight and cholesterol. The fresh leaves juice is given to strengthen fertility in women. Fresh paste of leaves is applied on the surface of the body to get rid of jaundice.
    - The moringa leaves are cooked and eaten to reduce the heat in the eyes.
16. *Syzygium cumini* (L.) Skeels (Family: Myrtaceae; Local Name: Jambolan, Jamun)
    - Its bark is powdered and taken with goat milk to treat diarrhea in humans and also used in treating animal diarrhea.
    - Seeds are pulverized and applied on the body for treating skin ailments.
    - Leaves are macerated into a paste to apply on scorpion bite marks as it acts as an antidote.
    - The dried stem bark is burnt to produce ashes and added with honey to treat emesis.
    - The plant twigs are used to treat mouth ulcers.

Table 1
List of figures of medicinal plants used in traditional medicine practice

 *Abrus precatorius* L.	 *Ailanthus excelsa* Roxb.	 *Alangium salvifolium* L.
 *Bacopa monneri*	 *Balanites aegyptiaca L*	 *Bambusa arudinacea* (Retz.) Wild
 *Barleria cristata* L.	 *Calotropis procera* (Ait.) R. Br	 *Cassia fistula* L.
 *Crateva nurvula* Buch-Ham	 *Datura metel* L.	 *Derris Indica* (Lam.) Bennet
 ***Echinops echinatus* L.**	 ***Emblica officinalis* L**	 ***Moringa concanensis* L.**
 ***Syzygium cumini* L.**	 ***Oroxylum indicum* (L.)**	

17. *Oroxylum indicum* (L.) Vent.
    - Its root is one of the ten roots which is used in the preparation of Dashmul kwath. It has anti-inflammatory, and anti-rheumatic properties.
    - The bark from the stem is powdered and taken orally along with water to treat hemorrhoids.
    - The paste made from root bark is given to increase hunger and improve digestion.
    - The roots or barks from the stem is macerated with water for overnight and a decoction is prepared from it and taken orally to cure Jaundice.
    - The paste obtained from the stem bark is used as an ointment to treat burns and inflammations.

4. Conclusion

In our research, we investigated and explored the medicinal plants which is used in the traditional medicine practice for treating acute and chronic illnesses. Natives use their indigenous knowledge system to use different plants for their day-to-day requirements [Bhasker, 2002; Katewa SS et al, 2003, Sharma N et. al, 2011]. For a number of diseases, the forefathers and ancestral natives of the aravalli district used plant based products as a remedy through trial and error and their experience and medicinal knowledge was shared with their younger generations. Studies on such ethno medicinal plants by gathering information from traditional medicine practitioners and tribal people of Aravalli district would be useful for the conservation of traditional medicinal knowledge and as well as the discovery of plant based drug compounds which exhibit enormous pharmacological values. The findings from this study is in line with the research works of other researchers who studied on the ethnobotanical prospects of the plant species in Aravalli range.

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