



Ethnobotanical Resources of Leguminales from Lonar Crater

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Abstract

Lonar crater is the unique ecosystem with its own feature. It is the crater formed by the meteorite impact on the earth about fifty two thousand years ago. The crater possesses the smallest forest sanctuary with great biological diversity. It is rich in its biodiversity. This may be one of the important resources for various ethnomedicines. In Lonar crater various types of medicinal plants are found. In present study plants belonging to leguminales are studied. This plant possesses various types of pharmacological drugs. This can be used as the medicine in various ayurvedic preparations. These drugs can be extracted from the various plant parts. Thus the given study highlights the ethnobotanical diversity of leguminales from Lonar Crater. The paper highlights the ethnobotanical diversity of leguminales from Lonar Crater.

Keywords: Lonar crater, leguminales, plant extract, ethnobotanical drugs.

Introduction

Ethnobotany is broadly defined as the study of relationship between people and plants. Some prefer to define it as the scientific study of the interactions between human cultures and plants. Although the scope of ethnobotany includes the study of plants used for a variety of economic and non-economic societal purposes (for examples as tools and construction materials, as food, in ritual, for divination, as cosmetics, for ornamentation, as textile, as currency and in social life), this chapter primarily focuses on the contributions that ethnobotany has made to modern medicine through its studies of the uses of plants in traditional societies. The history of ethnobotany began before its formal recognition as a distinct field of study within botany. People have been interested in plants for their medicinal properties for hundred, if not thousands of centuries.

The first records of plants used for medicinal purpose in the Western tradition appear in ancient Egypt and ancient Sumer. Lonar crater is the unique ecosystem with its own feature. It is the crater formed by the meteorite impact on the earth about fifty two thousand years ago. The crater possesses the smallest forest sanctuary with great biological diversity. It is rich in its biodiversity. This may be one of the important resources for various ethnomedicines. In Lonar crater various types of medicinal plants are found. This plant possesses various types of pharmacological drugs. This can be used as the medicine in various ayurvedic preparations. These drugs can be extracted from the various plant parts. The medicinal plants are the plants whose parts (leaves, seeds, stem, roots, fruits, foliage etc.) extracts, infusions, decoctions, powders are used in the treatment of different diseases of humans, plants and animals¹. Plant extracts are highly efficient against microbial infections. The use of different parts of several medicinal plants to cure

specific ailments has been in vogue from ancient times. The indigenous system of medicine namely Ayurvedic, Siddha and Unani have been in existence for several centuries². This system of medicine caters to the needs of nearly 70% of the population residing in villages. Besides the demands made by these systems as their raw material, the demands for medicinal plants made by the modern pharmaceutical industries has also increased manifold^{3,4}. For thousands of years, natural products have been used in traditional medicine all over the world and predate the introduction of antibiotics and other modern drugs. Antibiotics provide the main basis for the therapy of bacterial infections⁵. Since the discovery of these antibiotics and their uses as chemotherapeutic agents there was a belief in the medical fraternity that this would lead to the eventual eradication of infectious diseases⁶. However, over use of antibiotics has become the major factor for the emergence and dissemination of multi-drug resistant strains of several groups of microorganisms⁷ bacteria have the genetic ability to transmit and acquire resistance worldwide emergence of *Escherichia coli*, *Klebsiella pneumoniae*, *Haemophilus* and many other β -lactamase producers has become a major therapeutic problem. Multi-drug resistant strains of *E. coli* and *K. pneumoniae* are widely distributed in hospitals and are increasingly being isolated from community acquired infections^{8,9}. *Abrus precatorius* is belongs to family fabaceae.

The plant is also used in some traditional medicine to treat scratches and sores, and wounds caused by dogs, cats and mice and are also used with other ingredients to treat leucoderma. They are ground with lime and applied on acne sores, boils, and abscesses¹⁰⁻¹⁸. The plant is also traditionally used to treat tetanus, and to prevent rabies. Thus the given study highlights the ethnobotanical diversity of leguminales from Lonar Crater.

Methodology

A good no. of excursion was made to survey and collect various medicinal plants in the Lonar crater in different seasons. The information was documented involving the conversation regarding this with different voids and old experienced people. Ethnobotanical data (Local names, mode of medical practices, use in various medical problems, etc) were collected and recorded. Photographs of these medicinal plants were taken for record. Identification of plants was made by referring the Botanical floras.

Results and Discussion

The present investigation comprises 20 plants belonging to leguminales showing ethnomedical properties. For each species

botanical name, family, local name and use of plant as medicine are provided in the table. Traditional healers using these plants to cure many diseases. Part-owners use specific plant parts like root, leaves, stem, bark, flowers, fruits etc in specific dosages for the treatment of ailments. The plant products are consumed raw or in the form of decoction, infusion, juice, oral treatment or applied externally as paste and ointments. Each of the plant having some specific chemical constituents like alkaloids, steroids, volatile oils etc. These ingredients are known for their pharmacological properties. The fresh plant parts as well as dried parts can be use in the form of extract, decoctions, powder and ash etc. These plants may be used separately or in mixture of several plants for better and quick result.

Table-1

List of various medicinal plants in the Lonar crater in different seasons with their Local names, mode of medical practices, use in various medical problems, etc

Sr. No.	Name of the plant	Common Name	Family	Ethnobotanical / Pharmacological source	Used as
1	<i>Bauhinia variegata</i>	Kachnar	Caesalpiniaceae	Bark, Legume, Seed	Bark – Alterative Anthelmintic, blood purifier, astringent, tonic
2	<i>Butea monosperma</i>	Palas	Caesalpiniaceae	Bark, Gum, Seed, Root, Flower	Root- used as antidote of snake bite, impotency. Stem- anti inflammation Leaf- antidiabetic, also used in cough, conjunctivitis, Flower- febrifuge, urinogenital infections, leucorrhoea, Seed- Against intestinal worms and urinary stone Gum – used against cracks in feet.
3	<i>Caesalpinia bonduc</i>	Sagargota	Caesalpiniaceae	Seed, Leaf, Root, Bark	Fruit- tonic, antipyretic Leaves and bark- Febrifuge
4	<i>Cassia auriculata</i>	Tarvat	Caesalpiniaceae	Root, Leaves	Root –febrifuge; Leaves-Laxative
5	<i>Cassia fistula</i>	Amaltash, Bahava	Caesalpiniaceae	Root, Leaf, Legume, Flower,	Pod-Purgative, anti-diabetic Leaves- emollient, Root- Febrifuge
6	<i>Cassia occidentalis</i>	Kashid	Caesalpiniaceae	Leaf, Seed, Root	Seed- Purgative, diuretic, hepatotonic
7	<i>Cassia tora</i>	Tarota, Takla	Caesalpiniaceae	Seed, Leaf, Fruit, Root	Leaves, Seed- used in leprosy, bronchitis, cardiac disorders, dyspepsia
8	<i>Parkinsonia aculeate</i>	Devbhabul	Caesalpiniaceae	Leaf, Steam, fruit, Flower, Root.	Leaf, Steam, fruit- Used in malarial fever, antioxidant. Flower-rheumatism, antidibetic, antimalarial.
9	<i>Butea monosperma</i>	Palas	Caesalpiniaceae	Bark, Gum, Seed, Root, Flower	Root- used as antidote of snake bite, impotency. Stem- anti inflammation

					Leaf- antidiabetic, also used in cough, conjunctivitis, Flower- febrifuge, urinogenital infections, leucorrhoea, Seed- Against intestinal worms and urinary stone Gum – used against cracks in feet.
10	<i>Tephrosia purpurea</i>	Unhali, Surpukha	Fabaceae	Root, Leaf, Seed,	Root- used in Rheumatism, diarrhea, dyspepsia, urinary infection, toothache and bleeding gums, Leaves- Antihelmintic, blood purifier, antitumor, antipyretic, used in eczema and other skin diseases, jaundice, anemia, and fever
11	<i>Clitorea ternatea</i>	Gokarna, Aparajita	Fabaceae	Root, Seed, Leaf,	Leaf juice- Haemostatic, used against bleeding in piles Whole plant shows Tranquillizing effect on brain, Sedative, laxative, Root- Antistress, antidepressant
12	<i>Abrus precatorius</i>	Gunj	Fabaceae	Leaf, Seed,	Seed- Antibacterial, Purgative, emetic , tonic, Aphrodisiac, Ophthalmic, antitumor used in brain tumor, Snake bite and Dysentery
13	<i>Dalbergia sissoo</i>	Sissam	Fabaceae	Root, Bark, Fruit, Seed, Leaf,	Root- Astringent Leaves- used in gonorrhoea Wood- alterative used in leprosy, boils
14	<i>Pongamia pinnata</i>	Karanj	Fabaceae	Seed, bark	Root juice- used in fistula and ulcers Bark - Antiperiodic , Astringent, Anthelmintic, Antipyretic, used in piles Seed- oil used in rheumatism, Leaves- used in ulcers
15	<i>Psoralea corylifolia</i>	Bawchi, Bakuchi	Fabaceae	Seeds, fruit, Root, Leaf,	Seed oil- used in Leucoderma, Psoriasis, Leprosy, Sexual Disability, Cough and Asthama
16	<i>Mucuna pruriens</i>	Khajkuri	Fabaceae	Seed	Used in parkinsons disease, Body building Supplement, increases human growth hormone
17	<i>Sesbania grandiflora</i>	Hadga	Fabaceae	Root, Leaf, Flower, Legume	Root- Anti inflammatory, febrifuge Bark- Astringent, also used in ulcer, scabies Leaves- antihelmintic, tonic, used in epileptic fits
18	<i>Albezia lebeck</i>	Shiras	Mimoceae	Root, Bark, Seed, Leaf,	Antiallergic, antifungal, anti inflammatory, cardio-tonic, hypocholesterolemic
19	<i>Acacia nilotica</i>	Bhabhul	Mimoceae	Bark, Gum, Leaf, Lomentum, Flower	Gum- demulcent, antidiabetic. Used in diarrhea, dysentery
20	<i>Acacia leucophloea</i>	Hiwar	Mimoceae	Root, Pod, seed	Bark- astringent, anthelmintic, demulcent, expectorant, antipyretic, antidote against snake bite, haemostatic, also used in gastrointestinal and respiratory infect



Caesalpinia bonduc
Local name – Sagargota



Clitoria ternatea
Local name – Gokarna, Aparajita



Pongamia pinnata
Local name – Karanj



Parkinsonia aculeate
Local name - Devbhabhul



Tephrosia purpurea
Local name – Surpukha, Unhali



Cassia auriculata
Local name - Tarvat

Figure-1
Photographs of selected medicinally important Leguminales plants

Conclusion

From above discussion it is concluded that the plants present surrounding us are useful in various aspects such as medicinal use as well as ornamental plants. Now it is our duty that how we can achieve benefits from them and in what extent we can use it. Care should be taken that these natural resources will not become endangered or extinct. By proper management and cultivation of such medicinal plants, our country will be developed in herbal medicine and many people will be benefited by the medicinal plants. Farmers can also get commercial benefits by cultivating these medicinal plants.

References

1. Nostro A.M.P., Germano, V. Angelo., A. Marino., and Cannatelli, M.A., Extraction methods and Bioutography for evaluation of medicinal plant antimicrobial activity, *Letters in Applied Microbiology*, (30), 379-348, (2000)
2. Purohit S.S. and Vyas S.P., Medicinal plants cultivation a scientific approach including processing and financial guidelines. 1st edit. Publishers Agrobios, Jodhpur, India, 1-3, (2004)
3. Gupta M.U.K., Mazumder S., Chakrabarti M. Gupta and Chakrabarti S., CNS activities of methanolic extract of Moringa oleifera root in mice, *Fitoterapia*, (70), 244-250, (1999)
4. Varaprasad Bobbarala1 and Varahalarao Vadlapudi, Abrus Precatorius L. Seed Extracts Antimicrobial properties against clinically important bacteria, *International Journal of PharmTech Research*, 1(4), 1115-1118, (2009)
5. Lewis K. and Ausubel F.M., Prospects of plant derived antibacterials. *Nat. Biotechnol*, (24), 1504-1507, (2006)
6. Kafaru E., Immense help formative workshop, In Essential Pharmacology, 1st Ed. Elizabeth Kafaru Publishers, Lagos, Nigeria, (1994)
7. Harbottle H., Thakur S., Zhao S. and White D.G., Genetics of Antimicrobial Resistance, *Anim. Biotechnol*, (17), 111-124, (2006)
8. Khan A.U. and Musharraf A., Plasmid Mediated Multiple Antibiotic Resistances in *Proteus mirabilis* Isolated from Patients with Urinary Tract Infection, *Med. Sci. Mont*, (10), 598-602, (2004)
9. Windholz M., The Merck Index: an encyclopedia of chemicals, drugs, and Biologicals, 10th ed. Rahway, New Jersey, Merck and Co., Inc, (1983)
10. Rajaram N. and Janardhanan K., The chemical composition and nutritional potential of the tribal pulse, *Abrus precatorius* L., *Plant Foods Hum Nutr*, 42(4), 285-290 (1992)
11. Olurinola P.F., A laboratory manual of pharmaceutical microbiology. Printed by National Institute for Pharmaceutical Research and Development, Idu, Abuja, Nigeria, 69- 105, (1996)
12. Zarger R, Stepp JR. Persistence of botanical knowledge among Tzeltal Maya Children, *Current Anthropology*, (45), 413-418, (2004)
13. Godoy R., Reyes-García V., Byron E., Leonard W., Vadez V., The effect of market economies on the well-being of indigenous peoples and on their use of renewable natural resources, *Annual Review of Anthropology*, (34), 121-38, (2005)
14. Hemlal H. and Subban R., GC-MS, HPTLC and Antimicrobial analysis of Root extracts of *Pseudarthria viscida* Wight and Arn and *Desmodium gangeticum* (Linn) DC, *I. Res. J. Biological Sci.*, 1(5), 57-65 (2012)
15. Khwaja Salahuddin, Gor Suresh, Visavadia Manish, Soni Virendra and Tatmia Nalin, Ethnobotanical Survey of Some Parasitic Plants Growing in Girnar forest of Junagadh District of Gujarat, India, *Int. Res. J. Biological Sci.*, 2(4), 59-62, 2278-3202, (2013)
16. Sinhababu Arijit and Banerjee Arpita, Documentation of Some Ethno-medicinal Plants of Family Lamiaceae in *Int. Res. J. Biological Sci.*, 2(6), 63-65, (2013)
17. Sainkhediya J. and Aske D.K., Ethno medicinal plants used by tribal communities for the treatment of Snake bite in west Nimar, MP, India, *ISCA J. Biological Sci.*, 1(2), 77-79 (2012)
18. Dey S.K., De A., Karmakar S., De P.K., Chakraborty S., Samanta A. and Mukherjee A., Ethnobotanical study in a remote district of West Bengal, India, *Pharmbit*, 2, 91-96 (2009)