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Floristic Survey of Hatundi Village, Ajmer and Medicinal Use of Leguminous Plants of the Area

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ABSTRACT

This study is based on survey and field observations covering the Hatundi village of Ajmer district. 66 plant species representing 29 families have been found in the study area and 20 plant species belonging to family Leguminosae were further taken for elaborate study because of its maximum occurrence in the area. At the time of survey, it was learnt that traditional and botanical knowledge is passed on from generation to generation by elders. The knowledge of many people about common medicinally and economically important plants is limited to only a few people and this knowledge will be extinct slowly if not studied thoroughly and documented properly. We will thus, be deprived of many worthwhile facts about the usefulness of plant parts in use by tribals since time immemorial. The uses of family Leguminosae have been listed.

Keywords: *Botanical, Leguminous, Hatundi village, traditional, knowledge.*

INTRODUCTION

Plants have always played a central role in indigenous cultures[27]. Plant products are used as food, as source of medicine and as raw materials for the weaving of fabrics[17]. In addition, wood is commonly used as a fuel for cooking and as a material for construction of homes[9].

Since the beginning of civilization, people have used plants as medicine. The earliest recorded use is found in Babylon, circa 1770 B.C. Any study on human life on the planet earth would not be complete without a look at the role of plants. The World Health Organization has estimated that over 80% of global populations rely chiefly on traditional medicine. The word "Ethnobotany" literally means the study of botany of the primitive human races. The term Ethnobotany was first applied by Harshberger in 1895 for the study of plants used by primitive and aboriginal people. Ayurveda, Homeopathy, Siddha, Unani etc. are traditional systems of medicine. The plant- based traditional systems of medicine continue to provide primary health care to more than three quarters of the world's populace. Out of 250,000- 300,000 total plants of the world, India harbors about 5,000 (18%) plants. India contributes to about 15% of the medicinal plants of the world. About 80% of these are found growing wild in different climatic regions of the country. During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world.

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But documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources. There are considerable economic benefits in the development of indigenous medicinal plants for the treatment of various diseases. Due to the lack of means of communication, poverty, ignorance and unavailability of modern health facilities, most people, especially those in rural areas are still forced to practice traditional medicine for their common day- to- day ailments. Most of these people are the poorest link in the trade of medicinal plants.

Leguminales (also called Leguminosae) is large, mostly treated as a distinct order[6]. In the present work, family Leguminosae was selected and thoroughly studied, taking its ethnobotanical importance and uses [8,18]in consideration. The reason behind selecting this family was maximum occurrence at the study site- Hatundi village, Ajmer and importance of the family in increasing soil fertility[20,1] in semi-arid regions of Ajmer district of Rajasthan.

LEGUMES

Legumes grow under diverse climatic conditions ranging from tropical forests to temperate areas as annuals, perennials, herbs, shrubs and trees. The family is important for their high nutritional value[18], both for human and cattle, primarily on account of high protein content in the seeds and also in leaves.

Herbal drugs obtained from plants are believed to be much safer[19,22,24] .This has been proved in treatment of various ailments. Many rural communities depend on plant resources mainly for herbal medicine, food, forage, dwellings, making household implements and sleeping mats. Till today many rural people and indigenous communities in Rajasthan[10] meet their basic needs from plant products, based on traditional knowledge.

STUDY SITE

Rajasthan is the biggest state of India, located in the north western part of India. The most striking geographical features of Rajasthan are the Aravali ranges, the oldest mountain range of the world.

Ajmer district is located in the center of Rajasthan between 25° 38’ and 26° 58’ North latitudes and 73° 54’ and 75° 22’ East longitudes. It is triangular in shape and covers an area of 8,481 sq.km, which is about 2.48% of the total area of the state. In the present study, Hatundi village, situated in the South of Ajmer was chosen. It lies approximately 17 km. from Ajmer city with an area of 929.352 hectares.

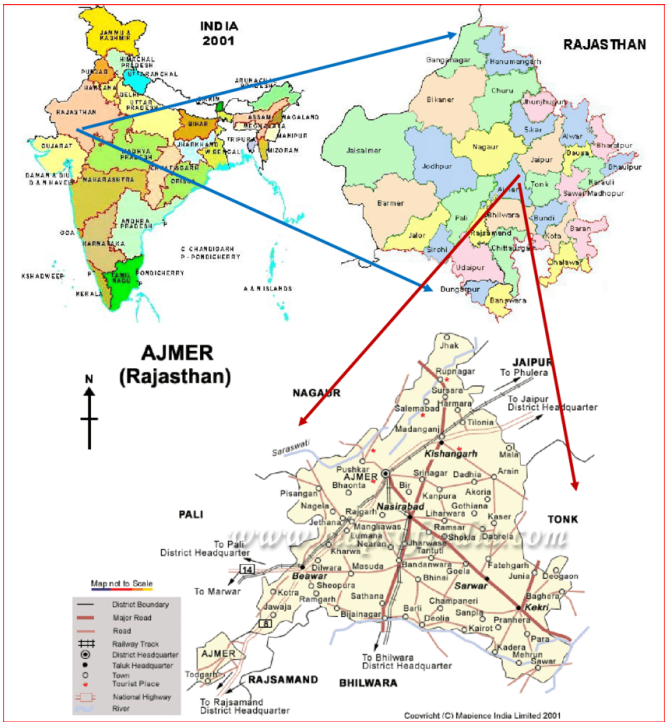

Fig. 1. Map of India showing the location of Rajasthan and Ajmer district

Fig. 2. Map showing Hatundi village in Ajmer tehsil

MATERIALS AND METHODS

The present study is the outcome of a series of extensive exploration trips conducted over a period of one year (October 2016- August 2017). Excursions were undertaken at least twice a month. Field trips were arranged in such a way as to cover all the localities at more or less regular intervals and to collect most plants in flowering and fruiting stages. The field notes included habit, habitat, colour of flowers and other pertinent features, which cannot be generally studied from herbarium species. All the specimens collected were serially numbered. Efforts were made to identify the plants from fresh material. For this purpose, assistance was sought from the Department of Botany, S.P.C.G.C., Ajmer. The identification was later authenticated at RUBL, Jaipur Herbarium.

Rainy season was the best time for plant collection and hence frequent field trips were made to cover as much of the study site during the months of July- August. The other time suitable for collection was in November-December, when plants belonging to family Leguminosae were in their full bloom. Flowering stages of some tree species also could be collected in this season. Many tree species which do not bear flower and foliage together blossom in spring.

Collection

During field trips at least three specimens for each species were collected. The specimens collected were pressed and dried using plant – press and blotting papers. The plant specimens were mounted on herbarium sheets after poisoning the specimens with mercuric perchloride and aluminium chloride and deposited in the Herbarium of Department of Botany, S.P.C.G.C., Ajmer .

Plants were identified with the help of various floras[7,25,5,,26].

Description

After successful identification of the flora of the region, literature available was thoroughly perused to select the plants of the family Leguminosae for medicinal value. The names of the plants were arranged alphabetically with botanical name, sub family, local name, plant part used and ethnobotanical importance.

RESULTS AND DISCUSSION

During the floristic survey of Hatundi village in Ajmer, 66 plant species representing 29 families were found in the study area as depicted in Table 1. Deciduous trees were mostly found in this village such as *Acacia nilotica* (L.) Willd.ex Delile, *Azadirachta indica* A. Juss., *Ficus racemosa* L., *Prosopis cineraria* (L.)Druce, *Prosopis juliflora* (Sw.)DC. Common shrubs, herbs and grasses of this area were *Zizyphus nummularia* (Burm.f.) Wight& Arn., *Calotropis procera* (Aiton) W.T.Aiton, *Capparis decidua* (Forssk.)Edgew. , *Vernonia cinerea* (L.) Less., *Argemone mexicana* L., *Boerhaavia diffusa*

L.nom.cons., *Tridax procumbens* L., *Corchorus depressus* L.and *Cynodon dactylon* (L.) Pers.

Weeds growing in the area of cultivated fields were *Euphorbia hirta* L., *Sida ovata* Forssk. , *Melilotus indicus* (L.) All. etc.

Table 1. Number of families and number of plants used by local people of Hatundi village, Ajmer.

S.No	Plant species	Family	Number of plants
1 2	*Barleria prionitis* L. *Justicia simplex* D.Don	Acanthaceae	**02**
3 4	*Achyranthes aspera* L. *Amaranthus viridis* L.	Amaranthaceae	**02**
5	*Mangifera indica* L.	Anacardiaceae	**01**
6	*Phoenix sylvestris* (L)Roxb.	Arecaceae	**01**
7 8	*Calotropis gigantea* L. *C.procera* (Ait.) R.Br.	Asclepiadaceae	**02**
9 10 11 12	*Eclipta alba* L. *Sonchus oleraceus* L. *Tridax procumbens* L *Vernonia cinerea* (L.)Less.	Asteraceae	**04**
13 14	*Heliotropium strigosum* Willd. *Sericostoma pauciflorum* Stocks	Boraginaceae	**02**
15 16 17	*Cassia auriculata* L. *Parkinsonia aculeata* L. *Tamarindus indica* L.	Caesalpiniaceae	**03**
18	*Capparis decidua* (Forsk.) Edgew.	Capparaceae	**01**
19	*Spergula arvensis* L.	Caryophyllaceae	**01**
20	*Chenopodium album* L.	Chenopodiaceae	**01**
21 22	*Anogeissus pendula* Edegw. *Terminalia arjuna* Roxb.ex DC	Combretaceae	**02**
23	*Citrullus colocynthis* (L.)Schrad.	Cucurbitaceae	**01**
24	*Cordia dichotoma* G.Forst.	Ehrectiaceae	**01**
25 26 27 28	*Euphorbia caducifolia* Haines *E. hirta* L. *Phyllanthus emblica* L. *Ricinus communis* L.	Euphorbiaceae	**04**
29	*Clitoria ternatea* L.	Fabaceae	**09**

30	*Crotolaria burhia* Buch.-Ham.		
31	*Dolichos lablab* L.		
32	*Indigofera cordifolia* B.Heyne ex Roth		
33	*I. linnaei* Ali		
34	*Medicago sativa* L.		
35	*Melilotus indicus* (L.) All.		
36	*Tephrosia purpurea* (L.)Pers.		
37	*Trigonella foenum-graecum* L.		
38	*Aloe barbadensis* Mill.	Liliaceae	**02**
39	*Asparagus racemosus* Willd.		
40	*Malvastrum coromandelianum* (L.)	Malvaceae	**02**
41	Garcke *Sida ovata* Forssk.		
42	*Azadirachta indica* A. Juss.	Meliaceae	**01**
43	*Acacia jacquemontii* Benth.	Mimosaceae	**08**
44	*A.leucophloea* (Roxb.)Willd.		
45	*A.nilotica* (L.)Willd.ex Delile		
46	*Albizia lebbeck*(L.)Benth		
47	*Mimosa pudica* L.		
48	*Pithecellobium dulce* (Roxb.)Benth.		
49	*Prosopis cineraria* (L.)Druce		
50	*P. juliflora* (Sw.)DC.		
51	*Glinus rotundus* L.	Molluginaceae	**01**
52	*Ficus bengalhensis* L.	Moraceae	**02**
53	*F. racemosa* L.		
54	*Eucalyptus camaldulensis* Dehnh.	Myrtaceae	**01**
55	*Boerhaavia diffusa* L.nom.cons.	Nyctaginaceae	**01**
56	*Argemone mexicana* L.	Papaveraceae	**01**
57	*Cynodon dactylon* (L.)Pers.	Poaceae	**02**
58	*Dactyloctenium*		

	scindicum Willd.		
59	*Anagallis arvensis* L.	Primulaceae	**01**
60 61 62	*Wrightia tinctoria*(Roxb.)R.Br. *Ziziyphus nummularia* (Burm.f.) Wight & Arn. *Z. mauritiana* Lam.	Rhamnaceae	**03**
63	*Borreria articularis* (L.f.) F.N.Williams	Rubiaceae	**01**
64	*Solanum virginianum* L.	Solanaceae	**01**
65	*Corchorus depressus* L.	Tiliaceae	**01**
66	*Lantana camara* L.	Verbenaceae	**01**

Table 2. The list of leguminous plants found during the survey of the area along with their uses is as follows:

S.No.	Botanical name	Vernacular name	Family	Plant part used	Disease
1.	*Acacia jacquemontii* Benth.	Banvalio, Bhu	M	Ba L P	Stings, snakebite Fodder
2.	*A.leucophloea* (Roxb.)Willd.	Safed kikar, Uranjia	M	Ba P R	Bronchitis,Tanning, Fibre Vegetable Fodder
3.	*A. nilotica* (L.)Willd.ex Delile	Babool	M	Ba P Se	Asringent Sexual impotency Food
4.	*Albizia lebbeck* (L.)Benth.	Siris	M	L F Ba Se R	Eye trouble Coolant Piles,Diarrhoea Piles,Diarrhoea
5.	*Cassia auriculata* L.	Anwal, Tarwar	C	Ba F R Se	Tanning leather Antihelminthic Skin diseases Opthalmia, Diabetes
6.	*Clitoria ternatea* L.	Koyalri	F	L F R Se Ba	Fodder Blue dye Tannin Tannin Tannin
7.	*Crotolaria burhia* Buch.- Ham.	Shinyo	F	L WP	Cooling medicine Fodder
8.	*Dolichos lablab* L.	Sem	F	P Se L R	Juice for inflamed ears,Vegetable Febrifuge

9.	*Indigofera cordifolia* B.Heyne ex Roth	Bekari	F	Se	Made into cakes with jowar or bajra
10.	*I. linnaei* Ali	Bekario	F	WP	Diuretic, Veneral diseases
11.	*Medicago sativa* L.	Rijka	F	WP	Fodder
12.	*Melilotus indicus* (L.)All.	Marvo, Banmethi	F	L Se	Fodder used only in mixture with bhusa Bowel complaints, Infantile diarrhea
13.	*Mimosa pudica* L.	Chuimui	M	R L	Piles, Fistula Diabetes, Hydrocele, glandular swellings
14.	*Parkinsonia aculeata* L.	Vilayati kikar	C	Ba L Fr St	Fibre Fever,Malaria, Abortifacient
15.	*Pithecellobium dulce* (Roxb.)Benth.	Jungle jalebi	C	P L Se	Fodder Edible
16.	*Prosopis cineraria* (L.)Druce	Khejri	M	P Ba Fl	Vegetable ‘sangri’ Rheumatism,Cough, Cold Safeguard against miscarriage
17.	*P. juliflora* (Sw.)DC.	Vilayti babool	M	P Gum	Astringent, against dysentery Confectionary, Emulsifying agent
18.	*Tamarindus indica* L.	Imli	C	Fr L Se	Pulp as carminative, laxative Fodder Astringent
19.	*Tephrosia purpurea* (L.)Pers.	Sarphanko, Kherinde	F	WP R	Tonic , laxative Asthma, cough
20.	*Trigonella foenum-graecum* L.	Methi	F	L Se	Vegetable Hair growth,Dysentry,Rheumatism

Ba- Bark, F- Flower, Fr- Fruit, L- Leaf, P- Pod, R- Root, St- Stem, Se-Seed, WP- Whole Plant.

Systemic field and related studies in the subject were pioneered by Botanical Survey of India.

Studies on food plants of certain tribals of south India by E.K.Janaki Ammal, greatly prompted Indian workers on Ethnobotany[12,19].

Ethnobotanical works in India fall in the following major categories:

Ethnobotany of certain ethnically distinct, primitive or otherwise interesting human societies[14].

Ethnobotany of any specific geographical region , which has one or more distinct ethnic groups, e.g. on tribal communities of Central India[15], Eastern Ghats [16] and Deccan [23].

Further specificity is also seen in some publications like plants in particular disease e.g. on gynaecological diseases[3]; on Urinary Tract Infections and Sexually Transmitted Diseases [13].Various plants enumerated in Table 2 show such uses of the leguminous plants found in Hatundi village, Ajmer.

Ethnobotany of particular plants genus or family of plants e.g. on family Lamiaceae [28,21]. Specific work was conducted on family Leguminosae and its members in India[2]. A similar approach was followed in this study.

Vernacular names of the useful plants of the region were given[11,4]. In this study, it was attempted to extract vernacular names of medicinal plants from knowledgeable village people of Hatundi village.

Rural people use fresh materials only to treat their ailments. These people are prone to various injuries, cuts and other diseases because they do hard work in fields. Ther are a large number of plants in nature. Each plant species has its peculiar use and characteristic. The rural people of Hatundi village treat various ailments by plants, whatsoever available and they use them directly as and when required.

The plants are commonly applied as paste or extract form externally as decoction in sore throat, diabetes, jaundice, ear ache, rheumatism, miscarriage, snakebite, scorpion sting etc. Various ailments related to asthma and coughs are cured by tribals either using a single herb or mixture of more than one herb.

This work embodies the results of planned ethnobotanical exploration of a botanically rich area. The main purpose of this survey was to study and record the uses of leguminous plants of Hatundi village. Many rural people know about common medicinal and economic uses of legumes but special knowledge is limited to only a few persons and this knowledge is slowly getting extinct.

REFERENCES

1. Bano, S. A. and S. M. Iqbal (2016). "Biological nitrogen fixation to improve plant growth and productivity." Int. J. Agric. Innov. Res **4**: 2319-1473.
2. Bargali, K. (2006). "Some Medicinally Important Leguminous Plants of Kumaun Himalaya." Medicinal Plants: Traditional Knowledge: 23.
3. Behera, K. K. (2006). "Plants used for gynecological disorders by tribals of Mayurbhanj district, Orissa, India." Ethnobotanical Leaflets **2006**(1): 15.
4. Bhandari, M.M.(1974).”Native resources used as famine food in Rajasthan. ”Eco. Bot.**28**:73-81.
5. Bhandari, M.M.(1990).”Flora of Indian Desert.” MPS Repros.
6. Bhattacharyya, B. and B. M. Johri (1998). Flowering plants: taxonomy and phylogeny, Springer-Verlag.
7. Duthie, J.F.(1903).” Flora of the Upper Gangetic plain, and of the adjacent Siwalik and sub-Himalayan tracts.” Superintendent of Government Printing.
8. Gebrelibanos, M., et al. (2013). "Nutritional and health implications of legumes." International Journal of Pharmaceutical Sciences and Research **4**(4): 1269.
9. Giday,M. et al.(2003).” An ethnobotanical study of medicinal plants used by the Zay people in Ethiopia.” J. of ethnopharmacology **85**(1);43-52.
10. Gorain, M., et al. (2012). "Role of insect bees in the pollination of Prosopis cineraria (L.) Druce (Leguminosae, Subfamily Mimosoideae) in Rajasthan." Advances in applied science research **3**(6): 3448-3451.
11. Gupta, R. and B.Dutta(1967).”Vernacular names of the useful plats of North western Indian arid regions. ” Journal d'agriculture traditionnelle et de botanique appliquée **14**(10): 402-453.
12. Himanshu, S. and K. Ashwani (2011). "Ethnobotanical studies on medicinal plants of Rajasthan (India): A review." Journal of Medicinal plants research **5**(7): 1107-1112.
13. Hossan, S., et al. (2010). "Traditional use of medicinal plants in Bangladesh to treat urinary tract infections and sexually

transmitted diseases." Ethnobotany Research and Applications **8**: 061-074.

14. Jadhav, D. (2006). "Ethnomedicinal plants used by Bhil tribe of Bibdod, Madhya Pradesh."
15. Jain, S. (2000). "Human aspects of plant diversity." Economic Botany **54**(4): 459-470.
16. Jain, A. K. and P. Tiwari (2012). "Nutritional value of some traditional edible plants used by tribal communities during emergency with reference to Central India."
17. Manoharachary, C. and D. Nagaraju (2016). "Medicinal plants for human health and welfare." Annals of phytomedicine **5**(1): 24-34.
18. Maphosa, Y. and V. A. Jideani (2017). "The role of legumes in human nutrition." Functional food-improve health through adequate food **1**: 13.
19. Mazid, M., et al. (2012). "Medicinal plants of rural India: a review of use by Indian folks." Indo Global journal of pharmaceutical sciences **2**(3): 286-304.
20. Mousavi, S. R. and H. Eskandari (2011). "A general overview on intercropping and its advantages in sustainable agriculture." Journal of Applied Environmental and Biological Sciences **1**(11): 482-486.
21. Mwafongo, E., et al. (2010). "Ethnobotanical study of Hyacinthaceae and non-hyacinthaceous geophytes in selected districts of Malawi." Ethnobotany Research and Applications **8**: 075-093.
22. Petrovska, B. B. (2012). "Historical review of medicinal plants' usage." Pharmacognosy reviews **6**(11): 1.
23. Pullaiah, T., et al. (2016). Ethnobotany of India, Volume 1: Eastern Ghats and Deccan, CRC Press.
24. Sharma, M. and A. Kumar (2013). "Leguminosae (Fabaceae) in tribal medicines." J. Pharmacogn. Phytochem **2**(1): 276-283.
25. Sharma, S. and B. Tiagi (1979). "Flora of north-east Rajasthan."
26. Shetty, B. and V. Singh (1987). "Flora of Rajasthan, Vol. I.-III" Botanical Survey of India, Calcutta, 451pp.
27. Singh, R. (2015). "Medicinal plants: A review." Journal of Plant Sciences **3**(1-1): 50-55.
28. Zgórka, G. and K. Głowniak (2001). "Variation of free phenolic acids in medicinal plants belonging to the Lamiaceae family." Journal of pharmaceutical and biomedical analysis **26**(1): 79-87.