

Periodic Research Ethnoveterinary Wisdom of Rural folks of Mandal Tehsil, District Bhilwara, Rajasthan, India



J. Singh

Assistant Professor,

Laboratory of Plant Taxonomy,
Deptt. of Botany,
MLV Government College,
Bhilwara, Rajasthan



N. R. Keer

Research Scholar,

Laboratory of Plant Taxonomy,
Deptt. of Botany,
MLV Government College,
Bhilwara, Rajasthan

Abstract

Survey of Mandal tehsil was carried out during 2016 - 2017 to document the ethnoveterinary plants used by the tribals and local people. The study is based on exhaustive botanical explorations and interviews with tribals, local people, shepherds and nomads (travellers with sheep from Pali district). The most common cattle diseases and problems include gogla (bottleneck), fatgiya (enterotoxaemia), khurpaka (foot and mouth disease), mata (sheep pox), thakla, haldariya (haematuria), Nimji (orf), Sindura (pneumonia or other respiratory diseases), diarrhoea, obstipation and durdi mata were recorded. The most common plant species used to cure above disease are *Butea monosperma*, *Calotropis procera*, *Curcuma longa*, *Euphorbia caducifolia*, *Trachyspermum ammi*, *Nicotiana tabacum* and *Capsicum annum*. During the study ethnoveterinary uses of 32 plant species belonging to 32 genera of 21 families of Angiosperms have been recorded. A list of plant species along with their family, local name and methods of administration are provided in this paper.

Keywords: Ethnoveterinary, Mandal, Rajasthan, India.

Introduction

Rajasthan is situated in the North-western part of India between 23° 30' - 30° 11' N latitude and 69° 30' - 78° 17' E longitude and covers an area of 3, 42, 239 sq km which is 10.4% of the country's total area. In which Mandal tehsil forms an ecotone between hilly forests of Aravallis and Thar Desert. It lies between 25°1' to 25°58' N latitude and 74°1' to 75°28' E longitude. The tehsil spreads in the western part of the Bhilwara district.

The tribals, namely Bhil and Meena reside in this tehsil of Rajasthan. Majority of the tribal population fall below the poverty line. The tribals are the main dwellers of these forests; some other people are also inhabited along with them. The plants of surrounding area form an integral part of their survival, culture and the information about traditional medicinal plants gets passed on from one generation to another generation through oral talks or folk songs.

A perusal of literature revealed that significant contribution has been made by several workers on ethnobotany in India (Jain, 1975, Rao 1981, Gangwar and Ramakrishnan, 1990, Abbas et al., 1992, Mannandher, 1995, Hegde et al., 1996). However, due to the geographical position, environment, topography and socio-economic conditions of the Indian desert, the ethnobotanist have recorded the wild plants which are used as famine food in deserted zones of the state. Irwin (1895) who furnished some ethnobotanical information for Ajmer, followed by Singh and Pandey (1980). In Rajasthan, ethnobotanical studies have been carried out by several botanical workers viz. Joshi (1995), Katewa & Arora (1997), Katewa & Choudhary (2000), Jain et al. (2008), Meena & Yadav (2006, 2010, 2010a), Meena (2011), Singh et al. (2018) have added to our knowledge on the ethnobotany of Rajasthan but ethnoveterinary knowledge of Mandal Tehsil is scanty, hence the present enumeration may enrich our knowledge. Therefore to collect the recent information about the ethnoveterinary plants used by tribals in their traditional healthcare system for their animals the present study was undertaken. Various types of livestock play a vital role in the agriculture based economy of Rajasthan. Sheep, goat, buffaloes, cows, bulls and camels are found throughout the region.

Cattle are regarded as the wealth of the tribal people and their well being is considered to be very important. Ethnoveterinary medicine often provides cheaper options and the products are locally available.

Livestock are the main economic resource of poor farmers and they have limited access to modern disease prevention and treatment practices. They frequently depend on traditional knowledge for the management of animal health problems and to improve their productivity. Despite the fact that ethnoveterinary medicine has been very crucial for the animal healthcare of most developing countries, it has not yet been well documented and much effort is needed in research.

Objective of the study

The main objective of the present research study is to document traditional ethnoveterinary knowledge of rural folks of Mandal tehsil as this indigenous knowledge of plants faces the risk of depletion. Many of these practices offer viable alternatives to modern allopathic treatments. As India has a rich heritage of traditional health practices that has been used since ages and provides low cost alternatives for primary treatment hence the study was carried out. In this study effort is made to record the scattered knowledge of ethnoveterinary herbal practices used to maintain the health and curing various diseases of livestock in the study area. Several factors such as lack of access to modern medicinal system, poor economic status of tribals and lack of resources leads to the advantages of traditional plant based treatments. The study aims to spread this valuable undocumented knowledge in modern perspective.

Materials and Methods

Field trips were conducted with the local medicine men and women of different age group from 6 - 70 years. The questionnaires were used to document the ethnoveterinary uses of plants. The rapport was established with one or two persons preferably the chief of the particular village, guidance was sought and then contact was established with other tribals of the locality. The linguistic fluency, personality and social standing are crucial for establishing rapport between the participants involved. The local informants were the medicine men, village headman, priests, other community leaders and men and women working in the field. Due to religious faith of tribals, the people who know about

the medicinal properties of plant do not want to give all the information because of the false belief that the plant will lose its medicinal properties if disclosed. For this reason, the collection of information from the tribals is a tedious task. The information collected during fieldwork was verified at different places through different informants and in different seasons. To determine the authenticity of collected data, repeated verification from different informants was done. A number of elderly persons of age above 45 years, having practical knowledge of plants as veterinary medicines in the native system were interviewed. The plant species of ethnoveterinary value have been collected with the help of the informants; plant specimens were collected and photographed. The species were identified with the help of reputed literature such as flora of Bhandari (1990), Singh & Shetty (1987-1993) and Yadav & Meena (2011). Most of the ethno-veterinary plants documented are locally available and easily accessible and for off-seasonal uses the tribals have acquired different ways to preserve them. The sun drying method is the most common way of preserving the plant and the plant product. The voucher specimens were deposited at the Herbarium, Department of Botany, M.L.V. Government College, Bhilwara. The ethno-veterinary plants of Mandal tehsil are enumerated as their botanical name, local name, family and the traditional methods of administration in different ailments are being presented. In the enumeration, plant species with their botanical names are arranged alphabetically, followed by family, local names and method of administration.

Results and Discussion

Mandal tehsil consists of many scattered and dense deciduous forests. In this area local inhabitants due to lack of proper medical facilities depend on forest products. The low cost and almost no side effects of these traditional preparations with medicinal plants make them adaptable by the local community. These people cure themselves as well as take care of their livestock by common available plants. The observed ethnoveterinary knowledge has been presented in table 1.

Table 1: Some Ethnoveterinary Plants of Mandal Tehsil, Bhilwara, Rajasthan, India

Sr. No.	Name of Species	Family	Local Name	Methods of administration
1.	<i>Acacia nilotica</i> L. (Voucher No.: MLVGCB Herb/2816)	Papilionaceae	<i>Babool</i>	Fruits are given to cattle to cure weakness and to increase lactation in Female.
2.	<i>Arachis hypogaea</i> L. (Voucher No.: MLVGCB Herb/1033)	Papilionaceae	<i>Mungphali</i>	The seed husk that remains after extraction of oil from seeds are given to cattle for recovery after delivery and improving milk production.
3.	<i>Boswellia serrata</i> Roxb. ex Colebr. (Voucher No.: MLVGCB Herb/2137) (Fig. 1)	Burseraceae	<i>Salar</i>	Bark decoction is given to treat arthritis and indigestion.
4.	<i>Butea monosperma</i> (Lain.) Taubert (Voucher No.: MLVGCB Herb/1479) (Fig. 2)	Papilionaceae	<i>Khankra</i>	The dry powder obtained from flowers are used for dressing on cuts and wounds, fresh bark is given once a day to cure weakness in animals.
5.	<i>Calotropis procera</i> (Ait.) Ait. f. (Voucher No.: MLVGCB Herb/3718)	Asclepiadaceae	<i>Akra</i>	Smoke of stem is produced to cure <i>Khurpaka</i> disease.
6.	<i>Capsicum annum</i> L. (Voucher No.: MLVGCB Herb/1181)	Solanaceae	<i>Mirchi</i>	The paste of red chillies is applied on <i>Khur</i> to cure <i>Khurpaka</i> disease.
7.	<i>Cassia fistula</i> Linn. (Voucher No.: MLVGCB Herb/7197)	Caesalpiniaceae	<i>Amaltas</i>	Pods are fed to treat flatulence, decoction of pods and bark is purgative.
8.	<i>Citrullus colocynthis</i> (L.) Schrad. (Voucher No.: MLVGCB Herb/1711) (Fig. 3)	Cucurbitaceae	<i>Gartumba</i>	Decoction of fruits and roots is given to treat constipation, digestive disorders and flatulence.
9.	<i>Crotalaria burhia</i> Buch.-Ham. (Voucher No.: MLVGCB Herb/1073)	Papilionaceae	<i>Sinio</i>	Roots are boiled, filtered and given orally to expel retained placenta.
10.	<i>Cucumis melo</i> L. (Voucher No.: MLVGCB Herb/5614)	Cucurbitaceae	<i>Kachra, Kachari</i>	Fruit paste mixed with butter or water is given to animal to cure dysentery and gastric problems.
11.	<i>Curcuma longa</i> L. (Voucher No.: MLVGCB Herb/2210)	Zingiberaceae	<i>Haldi, Harad</i>	Hindura, disease caused by worms is treated with rhizomes.
12.	<i>Cyamopsis tetragonoloba</i> (L.) Taub. (Voucher No.: MLVGCB Herb/2173)	Papilionaceae	<i>Guar, Gwarfali</i>	Seeds are boiled, filtered and kept for whole night. Next day, mixed with oil, are given orally four times a day, to cure weakness.
13.	<i>Dendrophthoe falcata</i> (L. f.) Etting (Voucher No.: MLVGCB Herb/1017) (Fig. 4)	Mimosaceae	<i>Dudeli, Dudhi</i>	Leaves alongwith stem strips of <i>Bambusa</i> sp. are tide on fractured bones.
14.	<i>Dichrostachys cinerea</i> (L.) Wight & Arn. (Voucher No.: MLVGCB Herb/2276) (Fig. 5)	Mimosaceae	<i>Goya-Khair kolai, Arka jari</i>	Extract of root bark is mixed with extract of stem bark of <i>Butea monosperma</i> and <i>Ziziphus mauritiana</i> Lam. and ¼ cup juice + ¾ cup of water is used, only one dose is sufficient to cure stomachache.
15.	<i>Euphorbia caducifolia</i> Haines (Voucher No.: MLVGCB Herb/1467)	Euphorbiaceae	<i>Thor, Danda thor</i>	Munda ana (Mouth diseases) were cured with the latex of stem.
16.	<i>Ficus racemosa</i> L. (Voucher No.: MLVGCB Herb/5924) (Fig. 6)	Moraceae	<i>Gular, Goolar</i>	Bark paste is mixed with stem sap of banana plant; filtered and given to the animal orally to cure diarrhoea during rainy season.

17.	<i>Gossypium arboreum</i> L. (Voucher No.: MLVGCB Herb/2876)	Malvaceae	<i>Kapaas, Kapa</i>	The seeds are given to ox to cure weakness. It is also given to cow and buffalo to increase milk production.
18.	<i>Grewia abutilifolia</i> Vent. ex. Juss (Voucher No.: MLVGCB Herb/983)	Tiliaceae	<i>Gengchi</i>	In case of bone fracture, after 3 days of fracture, sun dried root powder used to make decoction. 1/2 cup of this decoction is given once a day for 3 days to animals.
19.	<i>Madhuca indica</i> J.F. Gmelin Voucher No.: MLVGCB Herb/2236) (Fig. 7)	Sapotaceae	<i>Mori, Mahuda</i>	The seed oil of <i>Brassica campestris</i> L. is applied on the fresh leaves. The leaves are tide on the swelling to reduce pain. The liquor prepared from corolla is also given to cattle to cure indigestion. The fresh Mature fruits are given to cattle for improving weakness.
20.	<i>Martynia annua</i> Linn. (Voucher No.: MLVGCB Herb/1068) (Fig. 8)	Martyniaceae	<i>Bichhu kanto</i>	Decoction of whole plant is applied on wounds as antiseptic, stem bark paste is applied for bone fracture.
21.	<i>Nicotiana tabacum</i> L. (Voucher No.: MLVGCB Herb/1783)	Solanaceae	<i>Tambakhu</i>	Dried leaves of <i>Nicotiana tabacum</i> L. and fruit powder of <i>Capsicum annum</i> L. are given orally for Haematuria.
22.	<i>Phoenix sylvestris</i> (L.) Roxb. (Voucher No.: MLVGCB Herb/1471)	Aricaceae	<i>Khajur</i>	The fresh leaflets are given to cattle to cure general weakness. It is also a diet during famine.
23.	<i>Pongamia pinnata</i> Linn. (Voucher No.: MLVGCB Herb/2370)	Fabaceae	<i>Karanj</i>	Oil from seeds is used for skin diseases and is applied on sore hump along with leaf paste of <i>Adhatoda zeylinica</i> .
24.	<i>Ricinus communis</i> L. (Voucher No.: MLVGCB Herb/217)	Euphorbiaceae	<i>Arandi</i>	2 gm of seed cotyledones is given to animals to cure stomach problems.
25.	<i>Saccharum officinarum</i> L. (Voucher No.: MLVGCB Herb/2173)	Poaceae	<i>Santa, Hanta</i>	The dried leaves used during <i>Gowardhan pooja</i> (Festival after Diwali) are preserved in houses. After delivery it is given to cattle to separate the placenta after delivery.
26.	<i>Sorghum halepense</i> (L.) Pers. (Voucher No.: MLVGCB Herb/3089)	Poaceae	<i>Bru</i>	The fresh or dried inflorescence or caryopsis is given to animal to cure diarrhoea.
27.	<i>Tephrosia purpurea</i> Pers. (Voucher No.: MLVGCB Herb/1058)	Papilionaceae	<i>Biyani</i>	Whole plants except roots are boiled in 1 bucket of water and animals are bathed with this water to kill lice, insects and also to cure skin diseases
28.	<i>Trachyspermum ammi</i> (L.) Sprague (Voucher No.: MLVGCB Herb/137)	Apiaceae	<i>Ajvain</i>	Fresh seeds or seed powder mixed in water and 1 cup of decoction is given to cure <i>Afra</i> (Indigestion in Animal). The Stem is also given to cure this disease.
29.	<i>Tribulus terrestris</i> L. (Voucher No.: MLVGCB Herb/7169) (Fig. 9)	Zygophyllaceae	<i>Gokhru</i>	Dried fruits are mixed with fodder and given to increase lactation in cattle; It is also given to ox to cure weakness.
30.	<i>Trigonella foenum-graecum</i> L. (Voucher No.: MLVGCB Herb/7094)	Papilionaceae	<i>Methi</i>	Fresh mature plant or boiled pods or seeds are fed to increase lactation in animals.
31.	<i>Triumfetta rotundifolia</i> Lam. (Voucher No.: MLVGCB Herb/857)	Tiliaceae	<i>Lapta</i>	1 cup of the root decoction is applied to cure neck sores.
32.	<i>Vitex negundo</i> L. (Voucher No.: MLVGCB Herb/1078)	Verebenaceae	<i>Negdia</i>	Handful of fresh or dried leaves are crushed in water and decoction is given to cure stomach ache

Conclusions

The most common cattle diseases and problems include bottleneck, diarrhoea, durdi mata, enterotoxaemia, foot and mouth disease, haematuria, obstipation, orf, pneumonia, respiratory diseases and sheep pox were recorded. The characteristics, sophistication and intensity of the ethnoveterinary systems differ greatly among individuals, societies and regions. Hence, documentation of ethnoveterinary medicine from regions having a rich ethnographic and biodiversity setting would be of great significance. The wealth of this tribal knowledge of medicinal plants points to a greater potential for research and the discovery of new drugs to cure the diseases of animals. This folk wisdom, if subjected to scientific studies, could benefit humankind in many ways. The present study has added a lot to our knowledge on the ethno-veterinary knowledge from Mandal tehsil of Rajasthan. The observed knowledge is an intellectual property right (IPR) of the tribal informants that are the main inhabitants of the study area.

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Fig. 1. *Boswellia serrata*



Fig. 2. *Butea monosperma*



Fig. 3. *Citrullus colocynthis*



Fig. 4. *Dendrophthoe falcata*



Fig. 5. *Dichrostachys cinerea*

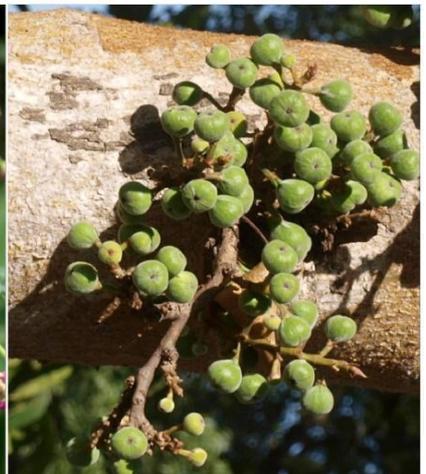


Fig. 6. *Ficus racemosa*



Fig. 7. *Madhuca indica* Fruitings



Fig. 8. *Martynia annua*



Fig. 9. *Tribulus terrestris*