

## Indigenous animal healthcare practices from Udaipur district, Rajasthan

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Livestock economy forms a major part of our agricultural economics. Tribals in far-flung rural areas still depend upon plants and household remedies for curing various veterinary ailments. The folk knowledge of ethnoveterinary significance has been identified by tribals through a process of experience over hundreds of years. The study throws light on folk ethnoveterinary practices of Udaipur district of Rajasthan. The paper deals with 30 diseases of domestic animals and their treatment by 62 plant species found in close vicinity of the rural people of the area.

**Keywords:** Animal healthcare practices, Livestock, Indigenous knowledge, Medicinal plants, Herbal remedies, Ethnoveterinary practices, Udaipur, Rajasthan

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In India, enough attention has not yet been given to the traditional veterinary herbal remedies. Even the *Rigveda*, *Atharvaveda* and 8 divisions of *Ayurveda* the pioneer documents with curative properties of plants, have not provided much information on veterinary remedies<sup>1</sup>. There has been a rich tradition and indigenous knowledge about animal healthcare in India. Remedies based on locally available herbs are still prevalent. Modern healthcare in the tribal and rural areas of Rajasthan is characterized by the deficiency of infrastructure, of qualified personnel and of medicine. The study was undertaken in the predominant agrarian and hilly areas of both rural as well as dense forests of Udaipur district. Udaipur is situated in the Southwest part of Rajasthan between the parallels 23° 49' and 25°28' North latitudes and 73°01' and 75°49' East longitudes at an average altitude of 579.4 m above mean sea level (Fig. 1). The district has an area of about 12,596 sq km, which is about 3.67% of the total area of Rajasthan. Total population of Udaipur district is 2,633,312 of which 81.38% reside in rural areas, whereas only 18.62% reside in urban areas. About one fifth of the total tribal population (nearly 18%) of the Rajasthan resides in the Udaipur district only. Rajasthan is placed at sixth place in India from the point of view of tribal population. *Bheel* and *Meenas* are the two

important major tribal groups inhabiting the region; *Damor*, *Garasiya*, *Dindor*, *Ahari*, *Raot*, *Parmar* and *Kathodi* constitute minor tribal groups.

Access to and within the rural area is extremely difficult during certain periods of the year making evacuation for medicinal treatment an unrealistic alternative. Therefore, rural people almost solely depend on traditional medicine. The traditional healers of Udaipur district are having a commendable knowledge of the medicinal virtues of plants that grow around them. This knowledge of rural people with the traditional healing practices using wild plants is now fast disappearing due to modernization and the tendency to discard their traditional lifestyle and gradual migration to the mainstream. The traditional use of plants as herbal remedies has further declined due to scarcity of such plants, which is caused by multifarious human activity coupled with natural calamities like droughts, thus threatening the diversity of herbal medicines. Therefore, an urgent need was felt to study and document this precious knowledge for posterity. The paper discusses the plants and other household remedies being practiced by the aboriginals of Udaipur district. The uses or information recorded here, have not been mentioned hitherto. A lot of efforts have been made to document information on herbal veterinary medicines in India<sup>2-7</sup>. Traditional animal based medicines have been described in *Unani*

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and *Ayurvedic* Systems of Medicine in India. An account of botanical ethnoveterinary prescriptions in Rajasthan has also been described<sup>8-12</sup>.

### Methodology

The traditional knowledge of plant based remedies for the treatment of ailments rests with the medicine man, all of which belong to one family of hereditary indigenous practitioners. Skills and experiences are passed on from one generation to the next by word of mouth and are guarded like secrets. The medicine man collects the plants and animal products needed for a particular application, either directly from the forest or from the local shops. In view of secretiveness of traditional medicine men and women, it was decided to interview a number of elderly people, who have a great deal of practical knowledge about the plants and animal products used as medicine in the native system. Before actually launching into the fieldwork, rapport was established with one or two persons preferably the chief, guidance sought and contact was then established with other tribals of the locality. The linguistic fluency, personality and social standing are crucial for establishing rapport between the participants involved. Field sites were visited with the local medicine men. Generally, the rural practitioners do not want to give all the information about a plant. For this reason, selection of informants is an important aspect of ethnobotanical study in the field. Experienced people, such as some elders, professionals, healers, medicine men, birth-attendant, woodcutter, shepherds, and headmen can provide important information on useful medicinal plants. A discussion about a particular herb with different informants from different places tends to be more helpful to record various queries about the drug. Also, personal observations are helpful for verification of the data provided by the informants at different places.

To determine the authenticity of information collected during field work, repeated verification of data from different people and at different times was done. Thus, only the specific and reliable information cross-checked with at least 13 informants has been incorporated. The collected herbs were identified up to species level at the Herbarium of Forest Research Institute, Dehradun. All the collected specimens were deposited in the Herbarium of Laboratory of Ethnobotany and Agrostology, Department of Botany, College of Science, ML Sukhadia University, Udaipur

for authentication of information and further reference. The information presented includes the name of ailment, plant parts, animal product or chemical used, their scientific and vernacular names and the mode of usage. The data are presented alphabetically, disease and disorder-wise.

### Observations

In all, 62 plant species are used by the natives in the treatment of 30 diseases of domestic animals (Table 1). Most of the uses were found to be new when compared with published literature on ethnoveterinary medicines.

#### Bone fracture

The local expert sets the bone with the help of lukewarm water. Paste prepared from the bark of *Bombax ceiba* L. is applied around fractured bone and bandaged with *Bambusa arundinacea* Ait. (bamboo) strips and fallen human hairs by using seed oil of *Brassica campestris* L. var. *sarson* Prain. About 50 gm roots of either *Grewia damine* Gaertn. or *Ampelocissus latifolia* (Roxb.) Planch. crushed with water is given to animal twice a day for three days. *Grewia damine* Gaertn. leaf paste mixed with 4-5 eggs of hen and cow milk is poured into the mouth of suffering animal with the help of either a tumbler or drenching tube made of bamboo or a plastic bottle.

#### Broken horns

Leaf paste of *Agave americana* L. is applied over broken horns for early healing. As a household remedy, *sindoor* (vermillion, red lead) with few drops of seed oil of *Brassica campestris* L. var. *sarson* Prain is applied over broken horns for early healing.

#### Burns

Sap of *Aloe vera* (L.) Burm.f. is applied over the burnt portion for cooling sensation. Sometimes writing ink is also applied over the burns.

#### Carbuncles/ pimples

Tuber paste of *Crinum asiaticum* L. is applied over carbuncles for early cure. Latex of *Ficus racemosa* L. is applied to suppress all kinds of pimples and carbuncles. For all kinds of skin diseases, sulphur mixed with *Brassica campestris* L. var. *sarson* Prain seed oil is applied over the body of animal.

#### Constipation

About 100 gm pods or bark of *Cassia fistula* L. stem boiled with 1 L of water and after cooling is fed

Table 1—Ethnoveterinary plants used in various disorders in animal health

Plant name	Local name	Diseases /disorders
<i>Abrus precatorius</i> L. (Fabaceae)	<i>Chirmi</i>	Constipation
<i>Abutilon indicum</i> (L.) Sweet (Malvaceae)	<i>Kanghi</i>	Haematuria, constipation
<i>Acacia nilotica</i> (L.) Del. sub sp. <i>indica</i> (Benth) Brenan (Mimosaceae)	<i>Babool</i>	Retention of placenta
<i>Achyranthes aspera</i> L. (Amaranthaceae)	<i>Adhijhara</i>	Conjunctivitis
<i>Aerva lanata</i> (L.) Jurs. Ex Schult. (Amaranthaceae)	<i>Chhoti Bui</i>	Snakebite
<i>Agave amaricana</i> L. (Agavaceae)	<i>Jungli gwarpatha</i>	Broken horns
<i>Albizia lebbeck</i> (L.) Benth. (Mimosaceae)	<i>Siras</i>	Conjunctivitis
<i>Allium cepa</i> L. (Liliaceae)	<i>Kanda</i>	For overall weakness
<i>Allium sativum</i> L. (Liliaceae)	<i>Lasan</i>	For weakness, foot and mouth disease and impaction with fever
<i>Aloe vera</i> (L.) Burm.f. (Liliaceae)	<i>Gawarpatha</i>	Burns, inflammation
<i>Ampelocissus latifolia</i> (Roxb.) Planch. (Vitaceae)	<i>Jungli-Angoor, Khata – limbu</i>	Bone fracture
<i>Anethum graveolens</i> L. (Apiaceae)	<i>Suwa</i>	Galactagogue
<i>Annona squamosa</i> L. (Annonaceae)	<i>Sitaphal</i>	Constipation, external parasites
<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guill. & Perr. (Combretaceae)	<i>Dhawada</i>	Fever
<i>Arachis hypogaea</i> L. (Fabaceae)	<i>Munghphali</i>	Constipation
<i>Asparagus racemosus</i> Willd. (Liliaceae)	<i>Satavar</i>	Galactagogue
<i>Azadirachta indica</i> A. Juss (Meliaceae)	<i>Neem</i>	Leucorrhoea
<i>Bacopa monnieri</i> (L.) Wettst. (Scrophulariaceae)	<i>Brahmi</i>	Paralysis
<i>Bambusa arundinacea</i> Ait. (Poaceae)	<i>Bans</i>	Bone fracture
<i>Bombax ceiba</i> L. (Bomacaceae)	<i>Semal</i>	Bone fracture, retention of placenta
<i>Brassica campestris</i> L. var. <i>sarson</i> Prain (Brassicaceae)	<i>Sarson</i>	Bone fracture, broken horns, carbuncles, eczema, general weakness, flatulence, internal wounds, infertility
<i>Butea monosperma</i> (Lam.) Taub. (Fabaceae)	<i>Khakhara</i>	Diarrhoea, external parasites, internal parasites, retention of placenta
<i>Cassia fistula</i> L. (Caesalpiniaceae)	<i>Karmalo, Amaltas</i>	Constipation
<i>Celosia argentea</i> L. (Amaranthaceae)	<i>Garkha</i>	Food poisoning
<i>Ceropegia bulbosa</i> Roxb. (Asclepiadaceae)	<i>Khadula</i>	Tumour formation
<i>Cissus quadrangularis</i> L. (Vitaceae)	<i>Jungli Angoor</i>	Foot and Mouth disease, impaction
<i>Corallocarpus epigaeus</i> (Rottl. & Willd.) Hoof. f. (Cucurbitaceae)	<i>Mirchia- kand</i>	Tonsillitis
<i>Cordia dichotoma</i> Forst. f. (Ehretiaceae)	<i>Gunda</i>	Diarrhoea, leucorrhoea
<i>Crinum asiaticum</i> L. (Amaryllidaceae)	<i>Jahari kanda</i>	Carbuncles
<i>Curculigo orchoides</i> Gaertn. (Hypoxidaceae)	<i>Kaali Musli</i>	Impaction
<i>Curcuma longa</i> L. (Zingiberaceae)	<i>Halad</i>	Foot and mouth disease, internal and external wounds
<i>Dalbergia sisso</i> Roxb. (Fabaceae)	<i>Shisham</i>	Diarrhoea
<i>Dioscorea alata</i> L. (Dioscoreaceae)	<i>Kada – kanda</i>	Tumour formation
<i>Encostemma verticillatum</i> (L.) Engl. (Gentianaceae)	<i>Naame</i>	Fever
<i>Ferula asafoetida</i> L. (Apiaceae)	<i>Hing</i>	Constipation, flatulence
<i>Ficus racemosa</i> L. (Moraceae)	<i>Gular</i>	Carbuncles, snakebite
<i>Gloriosa superba</i> L. (Liliaceae)	<i>Kalgari</i>	Foot and mouth disease problems during delivery
<i>Grewia damine</i> Gaertn. (Tiliaceae)	<i>Gangaran</i>	Bone fracture
<i>Grewia orientalis</i> L. (Tiliaceae)	<i>Gengchi</i>	Impaction
<i>Hibiscus rosa- sinensis</i> L. (Malvaceae)	<i>Gurhal</i>	Haematuria, leucorrhoea
<i>Linum usitatissimum</i> L. (Linaceae)	<i>Alsi</i>	Constipation
<i>Melia azedarach</i> L. (Meliaceae)	<i>Bakayan</i>	Removal of intestinal parasites
<i>Mucuna pruriens</i> (L.) DC. (Fabaceae)	<i>Kenvach</i>	Infertility
<i>Oryza sativa</i> L. (Poaceae)	<i>Chaval</i>	Diarrhoea

Contd.

Table 1—Ethnoveterinary plants used in various disorders in animal health—Contd.

Plant name	Local name	Diseases /disorders
<i>Phaseolus mungo</i> L. (Fabaceae)	Urad	Foot and mouth disease
<i>Piper nigrum</i> L. (Piperaceae)	Kali Mirch	Foot and mouth disease, mastitis, impaction with fever
<i>Plumbago zeylanica</i> L. (Plumbaginaceae)	Chitrak	Flatulence
<i>Rhus mysurensis</i> G. Don. (Anacardiaceae)	Dansarae	Eczema
<i>Ricinus communis</i> L. (Euphorbiaceae)	Arand	Constipation, flatulence
<i>Saccharum officinarum</i> L. (Poaceae)	Haanta	Infertility and wounds
<i>Sesamum indicum</i> L. (Pedaliaceae)	Til	Constipation, eczema, foot and mouth disease
<i>Soymida febrifuga</i> (Roxb.) A. Juss. (Meliaceae)	Rohin	Diarrhoea
<i>Tamarindus indica</i> L. (Caesalpinaceae)	Amli	Food poisoning
<i>Tinospora cordifolia</i> (Willd.) Miers. (Menispermaceae)	Adharvela	Foot and mouth disease, tonsillitis
<i>Trachyspermum ammi</i> (L.) Sprangue (Apiaceae)	Ajmo	Flatulence
<i>Trianthema portulacastrum</i> L. (Aizoaceae)	Hato	Diarrhoea
<i>Tridax procumbens</i> L. (Asteraceae)	Kagla ri mehndi	Wounds
<i>Trigonella foenum-graceum</i> L. (Fabaceae)	Methi	Galactagogue
<i>Triticum aestivum</i> L. (Poaceae)	Gehu	Galactagogue, infertility
<i>Vitex negundo</i> L. (Verbanaceae)	Negad	Foot and mouth disease, impaction with fever
<i>Wrightia tinctoria</i> (Roxb.) R. Br. (Apocynaceae)	Dudhi/Kher	Foot and mouth disease
<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn. (Rhamnaceae)	Bor	Retention of placenta

to the animal as a purgative. Five to seven leaves of *Annona squamosa* L. ground with a pinch of sodium carbonate, a pinch of resin of *Ferula asafoetida* L. and mixed with 200-400 gm seed oil of either *Sesamum indicum* L., *Arachis hypogaea* L., *Ricinus communis* L. or *Linum usitatissimum* L. is given to the animal at a time with the help of drenching tube or bottle. Dosage of this preparation depends on body weight of the animal. Paste of 1-2 *Abrus precatorius* L. seeds is fed to the animal for relief in constipation.

### Conjunctivitis

Sheep milk mixed with leaf latex of *Albizia lebbek* (L.) Benth. is used as eye drops. Tribals claim that it keeps the eyes of even human beings fit for at least 6 months. Leaf juice of *Achyranthes aspera* L. is used as eye drops for curing opacity of cornea.

### Diarrhoea

Mixture prepared from 100 gm *Butea monosperma* (Lam.) Taub. and *Soymida febrifuga* (Roxb.) A. Juss. bark each crushed with 500 ml buttermilk is given thrice a day till the animal feels well. Leaf paste of *Cordia dichotoma* Forst. f. is given to the animal with water. Starch of rice (*Oryza sativa* L.) is fed to the animal. Leaf paste of *Dalbergia sissoo* Roxb. is given to the animal. Leaves of *Trianthema portulacastrum* L. ground with *Piper nigrum* L. (pepper) seeds is given orally in diarrhoea.

### Eczema/ scabies

Animals are given massage of *Brassica campestris* L. var. *sarson* Prain or *Sesamum indicum* L. seed oil with a spoonful of sodium chloride added to it. Leaf paste of *Rhus mysurensis* G. Don. is applied over the body against allergy / rashes / eczema.

### Fever

Handful of *Anogeissus latifolia* (Roxb. ex DC) Wall. ex Guill. & Perr. bark boiled with 500 ml water, cooled and is then given to the animal twice a day for 2 days. 50 gm ammonium chloride and 50 gm potassium nitrate made into an aqueous solution is given to the animal twice a day for 2-3 days. Leaves of *Enicostemma verticillatum* (L.) Engl. are given with fodder to the young animals in fever.

### Flatulence

About 250 gm seeds of *Trachyspermum ammi* and 2-4 *Plumbago zeylanica* L. leaves boiled with water is fed to the animal. 250 ml seed oil of *Ricinus communis* L. is given to the animal for instant relief. A pinch of resin of *Ferula asafoetida* L. with 500 ml *Brassica campestris* L. var. *sarson* Prain seed oil is given to a buffalo for instant relief.

### Food poisoning

If cattle have engulfed anything poisonous (especially toxic chemicals) along with fodder then 2-3 L of buttermilk is given to the cattle for

detoxification. Root juice of *Celosia argentea* L. mixed with *Tamarindus indica* L. fruits or leaves is given orally in poisoning.

### Foot and mouth disease (Anthrax)

Dead fish is allowed to rot in water, and then the water is sprayed over the suffering animal. Cattle are fed with chapattis made up of *Phaseolus mungo* L. with *Sesamum indicum* L. seed oil. *Gloriosa superba* L. tubers crushed with water are applied over toes of the cattle and are fed with decoction of 50 gm of *Tinospora cordifolia* (Willd.) Miers. (whole plant) and a spoonful of *Curcuma longa* L. dried rhizome powder twice a day for three days. 200 gm *Cissus quadrangularis* L. (whole plant) ground with 50 gm each of *Wrightia tinctoria* (Roxb.) R. Br. bark, *Vitex negundo* L. leaves, powdered *Piper nigrum* L. seeds and *Allium sativum* L. bulbs is given in foot and mouth disease.

### For strength (Tonic)

To overcome the calcium deficiency and overall weakness after delivery, cattle are fed with white bulbs of *Allium cepa* L. *Brassica campestris* L. var. *sarson* Prain seed oil and *Allium sativum* L. bulbs boiled and cooled is given orally to the animal.

### Galactagogue

Milch animal is fed with *Asparagus racemosus* Willd. whole plant early in the morning with empty stomach. They are also fed with porridge prepared from seeds of *Trigonella foenum-graceum* L., *Anethum graveolens* L. and *Triticum aestivum* L.

### Haematuria

500 gm *Abutilon indicum* (L.) Sweet leaves are given to the animal along with fodder. 500 gm of *Hibiscus rosa-sinensis* L. leaves are useful as fodder to control haematuria.

### Impaction

Dried tubers of *Curculigo orchioides* Gaertn. ground with stem of *Cissus quadrangularis* L. is given orally for impaction. *Grewia orientalis* L. leaves are given orally as fodder for relief from impaction. Tender leaves of *Vitex negundo* L. with *Piper nigrum* L. seed powder and *Allium sativum* L. bulbs are given as a paste in ephemeral fever and impaction.

### Infertility

One or two pods of *Mucuna pruriens* (L.) DC. mixed with jaggery (*Saccharum officinarum* L.) or

wheat bread is fed twice a day for five days to the female animal to bring it into heat. 500 gm sprouted seeds of *Triticum aestivum* L. mixed with jaggery (*Saccharum officinarum* L.) and *Brassica campestris* L. var. *sarson* Prain seed oil are given to the animal 5-10 days for oyster induction.

### Internal wounds

A mixture of *Brassica campestris* L. var. *sarson* Prain, seed oil *Curcuma longa* L. rhizome and potash alum is given to the animal orally through a drenching tube.

### Inflammation

Paste of potash alum mixed with burnt machinery oil is applied locally. *Aloe vera* (L.) Burm.f. pulp is applied on any kind of skin irritation.

### Leucorrhoea

Leaves and fruits of *Cordia dichotoma* Forst. f. are given to the animal suffering from leucorrhoea. Leaves of *Hibiscus rosa-sinensis* L. and *Azadirachta indica* A. Juss are also beneficial if given as fodder to the cattle.

### Mastitis

150 gm *Piper nigrum* L. seeds mixed with 280 gm milk fat is given daily for 3 days. Oil and acidic things are not given to the cattle for 9 days under this treatment. Some whole organism of *Vespa orientalis* (wasps) are boiled with water and the steam treatment is given to the mammary glands for early recovery.

### Paralysis

Whole plant paste of *Bacopa monnieri* (L.) Wettst. (*Brahmi*) is given to the animal. A single dose is found to be effective.

### Problems during delivery

For easy delivery, flowers paste of *Gloriosa superba* L. is given with warm water and applied over palms and shown to the cattle facing labour pain. This results in easy delivery and also easy removal of placenta.

### Removal of external parasites

Leaf paste of *Annona squamosa* L. is applied over the infected area. Gum exudates of *Butea monosperma* (Lam.) Taub. is also found to be very effective if applied over the infected area.

### Removal of intestinal parasites

25-30 gm leaves of *Melia azedarach* L. is given to the suffering animal for 2-3 times. Excess quantity is

poisonous. 100 gm seeds of *Butea monosperma* (Lam.) Taub. crushed and boiled with water is given to the suffering animal for one or two days only.

### Retention of placenta

Decoction of old (2 - 3 years) thorns of *Acacia nilotica* (L.) Del. sub sp. *Indica* (Benth) Brenan or *Ziziphus nummularia* (Burm.f.) Wight & Arn. is given to the animal for early removal of placenta after delivery. Flowers of *Bombax ceiba* L. and *Butea monosperma* (Lam.) Taub. are given to the animal for early removal of placenta.

### Snakebite

Bark paste of *Ficus racemosa* L. is applied over the injury. Crushed roots of *Aerva lanata* (L.) Jurs. ex Schult. are given orally as an antidote to snakebite.

### Tonsillitis

Mouth is washed with lukewarm saline water. Juice of one tuber of *Corallocarpus epigaeus* (Rottl. & Willd.) Hoof. f. and whole plant of *Tinospora cordifolia* (Willd.) Mier. is fed to the suffering animal twice a day for 3 days.

### Tumour formation

For treating all kind of tumour formation in the animals, tubers of *Dioscorea alata* L. are fed to the animal. In case of goats, *Ceropegia bulbosa* Roxb. leaves are given as fodder as a prophylactic measure.

### Wounds

Jaggery (*Saccharum officinarum* L.) and human fallen hairs wrapped over a hot iron rod, touched to the wound stops bleeding instantly. Leaf paste of *Tridax procumbens* L. is applied over the wound to stop bleeding.

### Discussion

The present study yielded interesting data which provide a lot of scope for further micro level studies to understand the scientific base involved in the use of crude drugs. Among the tribal inhabitants *Dangis*, *Meenas*, *Devasis*, *Gametis*, *Rebaris* and *Garasiyas* have worthy information used for veterinary diseases. Ethnoveterinary plants used for various treatments of animal diseases arranged in alphabetical order; with

their local name, family and name of the diseases in which each plant is reported to be useful are given in Table 1.

Tribals, for their survival in this ecosystem, based on their generations of practical experience, have evolved means and options in the form of indigenous animal healthcare practices that have minimal dependence on external input. These practices have helped in conservation of 62 plants (Table 1) and sustain people themselves in the inhospitable and resource scarce ecosystem. The indigenous animal healthcare practices mitigate the inadequacy in modern veterinary infrastructure, ensure resource conservation and save expenditure through minimal or least investment. Therefore, it is imperative to maintain bio-resources so that these practices are also continued.

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