

ETHNO VETERINARY PRACTICES OF INDIA WITH PARTICULAR REFERENCE TO USE OF PLANT BIO RESOURCES IN ANIMAL HEALTH CARE

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Ethnoveterinary practices cover people's knowledge, skills, methods, practices and belief about the care of their animals (Mc Corkle, 1986).

"Ethnoveterinary medicine" is the knowledge developed by local livestock holders and contrasts the allopathic veterinary medicine taught in Veterinary Colleges/Universities. Both are dynamic and changing. Ethno Veterinary Medicine is developed by farmers in field and barns rather than in scientific laboratories. It is less systematic, less formalized and usually transferred by word of mouth rather than writing. Ethno veterinary medicine is in the danger of extinction because of advancement of the modern veterinary medicine.

Both the systems have their limitations and strengths and therefore, it would be prudent to use them on complementary basis.

Components of Ethno Veterinary Practice:

Ethnoveterinary medicine is more than use of herbs in treatment. It has following components:

1. **Information:** Symptoms of diseases, seasonal variation in disease occurrence, knowledge about the pastures.
2. **Practice:** Skills in bone setting, vaccination against infections diseases and management practices.
3. **Tool and technologies:** May include animal housing adapted to local conditions.
4. **Beliefs:** Some of the beliefs may useful like feeding of salt to counteract evil winds, not allowing the animals on pastures where other animals have died.
5. **Breeds:** Selection of breeds.
6. **Human resources:** Knowledgeable farmers and local healers who can be partners in the development of the projects

Limitations of Ethno Veterinary Practices:

1. Some remedies are inconvenient to prepare and use.
2. Availability of plants is seasonal.
3. Some practices are harmful.
4. Dosages are uncertain and remedies not standard. (based on the empirical basis)
5. The diagnosis may be inadequate (as it is based on symptoms) rather than underlying cause of the disease.
6. Ethnomedicines are not fast acting and potent and less suitable to treat epidemic & endemic infections diseases e.g. suitable for digestive disorders.

Strengths:

1. Useful for cold, skin diseases, worms, wounds, reproductive disorders, nutritional deficiencies & mild diarrhoea.
2. Cheap & readily available.
3. No residue problem.

Opportunities:

1. Validation of Ethnoveterinary medicine:

- Tapping experience of local people.
- Searching literature on botany, phyto- chemistry and *in vitro*, *in silico* (computer based) and *in vivo* tests.
- Laboratory tests.
- Clinical trials in herds by small holders, also farmers may conduct own tests.
- Monitoring the use of remedies in the field.
- Studying the impact on production and economic parameters.

The exact method or combination of methods with depend upon the intended use of practice to be tested and purpose of validation.

2 Validation to prove or disapprove local claims:

The scientifically valid methodology should be used. However, the drug may act differently *i.e.* acts to build up immunity. This may be a long term process. Anthelmintics can not be validated on the basis fecal egg count.

3. Validation for drug development:

For this sound scientific standard need to be followed for the drug is to be tested according to country's laws.

4. Validation for technology transfer:

There may be difficulty in technology transfer due to location specific nature of ethno veterinary practices. Therefore location specific technologies can be developed.

5. Validation for field use in extreme conditions-

Where people cannot afford costly, imported medicine, the ethnomedicines which have been tested else where and safe and widely used in human medicine or else where in animals can be used.(medicinal plants tested in the Latin America can be used for India because of the similar agro climatic conditions)

Ethno veterinary medicine in development:

1. Ethnoveterinary technologies can be used as starting point in communities of origin or selected remedy can be improved outside and returned as value added to its place of origin.
2. Can help providing common ground e.g. herders information on disease control can help focus disease control.
3. Knowledgeable livestock keepers and local healers are repositories of knowledge and valuable partners in community based animal health care and other livestock development activities.

Need of Bio-Diversity Conservation

India is one of the World's 12 regions having the largest biodiversity. It has 45000 plant species of which 15000-20000 m plants possess proven medicinal value (Krishna Kumar 1996).

- Studies of plant taxonomies have to be updated. Biodiversity can be assessed and utilized only after determining the present state of the local and regional flora.
- A network of protected areas should be established to prevent the loss of the rich natural wealth. This would also help to preserve a range of ecotypes and a gene pool of medicinal plants.
- For many wild species of medicinal plants, no suitable cultural practices are known. Therefore, the domestication of species should be studied, especially of those that are under pressure. Biotechnology can help in the propagation of endangered species though it does not invent but uses already existing genes.

Policy changes ?

1. There is need of biodiversity conservation and linked to and its utilization.

2. There is only 5% budget for indigenous system of medicine including all other systems like Sidha and Unani. Budget for indigenous health care need to be increased. There is need of amalgamation of different systems to faster a sound health policy.
3. Indigenous health care need to be included in veterinary curriculum.
4. There should be communication between indigenous health care systems of countries like China & India to unearth the hidden treasure of indigenous knowledge.
5. Protection of knowledge & right of indigenous people.
6. Use of modern & analytical methods for quality control. But this does not mean standardization at par with chemical entities .
7. Develop standard specification for herbal medicine by indicating the ingredient, amount for range of active principle, their therapeutic properties etc. Also better methods to improve shelf life. The value of studies comparing the ethnobotany of distant and distant regions within a country or different countries is universally recognized now. The table 1 describes ethno veterinary uses of plants less known in India. The uses are not prevalent in India but merit further study.

Veterinary practices during Vedic period:

Rig veda (10:97:2) mentions that this motherly earth has provided us hundreds and thousands of plants which have got capabilities of keeping us healthy and if required cure us from various ailments/diseases. In Atharvaveda (8:7:2), the sun has been mentioned “the father of plants” and the earth is considered mother of plants. The extracts of these plants when taken as prescription have potential of penetrating into our muscles, joints and relieve ailments (Rigveda 10:97:12). Further, it has been mentioned that these herbs conquer diseases as fast as swift horses, prove their efficacy for the sick, make them healthy and happy (Rigveda 10:97:3). The knowledge of identification of these plants and their use was mandatory for the clinicians. To strengthen this point in the Atharvaveda, it has been mentioned that king should punish such clinicians who are unaware of medicinal properties of plants or if they are engaged in production of certain spurious/toxic medicine (Atharvaveda 4:17:4).

Atharvaveda (8:7:10) also mentions that the plants which are used as antidote of the poison should never be destroyed.

In the Atharvaveda (11:4:16), there are mention of remedies of ailments. According to it, there are four kind of remedies, which are considered to protect life as well as they help increase life span of individual.

These include :-

- The drug of the angirasas (juice of plant and herbs).
- The drugs of the artharvans (a part of mantra therapy).
- The divine drugs in form of prayers.
- The drugs of human artifice and contrivance.

The plants used in vedic period for various ailments are as follows:

Sr.No.	Indication	Plant	Reference
1.	High fever	Munja	Atharvaveda (1:2:4)
2.	Jaundic	Shuka	Atharvaveda (1:22:4)
3.	Rejuvenating maleness	Brish	Atharvaveda (4:4:2)
4.	Fracture	Rohini	Atharvaveda (4:12:1)
5.	For increasing milk of cow.	Arundhati	Atharvaveda (6:59:1)

Ethnoveterinary medicine in Kerala (South India)

In Kerala in South India, many livestock owners, especially those who are poor and live in remote areas, use ethnoveterinary medicine (EVM) for the primary healthcare of their animals. Based on survey among 150 farmers and 19 traditional healers :- .

- It was found that animal healthcare practices in Kerala are influenced by Ayurveda, the ancient Indian system of medicine.
- About 75% of the farmers were using traditional healthcare methods. Most of them tried EVM as a first aid. If an animal failed to respond, then either it was taken to the nearest veterinary hospital or a veterinarian was called, depending on the severity of the disease and the value of the animal.

Neem (*Azadirachta indica*) and tamarind (*Tamarindus indica*) were the most popular treatment plants. Both were commonly available in every village in Kerala. All parts (bark, leaf, root, fruit etc.) were utilized in the preparations. Other plants commonly used included the spices: pepper (*Piper nigrum*), ginger (*Zingiber officinale*), turmeric (*Curcuma longa*), and garlic (*Allium sativum*). In contrast to other reports (e.g., Ramanathan 1996), the farmers did not seem to use any of the following plants for animal treatment: *thulasi* (*Ocimum sanctum*), *adalodakam* (*Adhatoda beddomei*), *ayamodakam* (*Apium graveolens*), *kurumthotti* (*Sida rhombifolia*), *thippali* (*Piper longum*), papaya (*Carica papaya*), and areca nut (*Areca catechu*).

The Traditional Health Care in Rajasthan:

The information documented traditional healer from Godwar area of Pali district in Rajasthan is (Based on 12 healers and 20 livestock healers)

The treatment inventory of a healer typically includes about 10-12 types of diseases. The most frequently named ones are:

- Diarrhoea (*dast*).
- Afterbirth retention (*jer*).
- Poisoning.
- Prolapse of the uterus (*aar nikalna*).
- Constipation (*pet band hona*).
- Liver problems (*piliya*).
- Bloat (*afra*).
- Pneumonia.
- 'Rheumatism' (*vadi*).
- Cough (*khassi*).
- Fever (*bukhar*).
- Indigestion (*pet me dukh hona*).
- Anorexia (*hiyapakki*).
- Blood in urine (*paisat me khun*)

Ved prepares medicines on the spot from plants that grow in the environs of the village and other standard ingredients that are locally available, such as ghee, oil and buttermilk.

Some of the spices/seeds used by healers in Rajasthan in the preparation of medicines. are as follows *

Hindi	English	Latin
<i>Rai</i>	Mustard	<i>Brassica sp.</i>
<i>Lal mirch</i>	Red pepper	<i>Capsicum annuum</i>
<i>Haldi</i>	Turmeric	<i>Curcuma longa</i>
<i>Hing</i>	Asafoetida	<i>Ferula asafetida</i>
<i>Kalajiri</i>	Black cumin	<i>Nigella sativa</i>
<i>Kaskas</i>	Poppy seed	<i>Papaver somniferum</i>
<i>Kali mirch</i>	Black pepper	<i>Piper nigrum</i>
<i>Ajwain</i>	Lovage	<i>Trachyspermum ammi</i>
<i>Methi</i>	Fenugreek	<i>Trigonella foenumgraecum</i>
<i>Soonth</i>	Dried ginger	<i>Zingiber officinale</i>

The cultivated plants used by healers in Rajasthan in the preparation of medicines are as follows:-

Hindi	English	Latin
<i>Pyaj/kanda</i>	Onion	<i>Allium cepa</i>
<i>Lehsun</i>	Garlic	<i>Allium sativum</i>
<i>Sarson ka tel</i>	Mustard oil	<i>Brasica sp.</i>
<i>Chai ki patti</i>	Tea leaves	<i>Camellia theifera</i>
<i>Bajuro</i>		<i>Citrus maximus</i>

<i>Kappas ki ful</i>	Cotton flowers	<i>Gossypium indicum</i>
<i>Jhuni mehendi</i>	Old henna leaves	<i>Lawsonia alba</i>
<i>Jarda</i>	Tobacco	<i>Nicotiana tobacum</i>
<i>Gur</i>	Jaggery (sugarcane)	<i>Saccharum officinale</i>
<i>Deshi shakkar</i>	Sugar	<i>Saccharum officinarum</i>
<i>Tilli ka tel</i>	Sesame oil	<i>Sesamum indicum</i>
<i>Til ki ful</i>	Sesame flowers	<i>Sesamum indicum</i>

The Uncultivated plants used by healers in Rajasthan in the preparation of medicines are as follows :-

Hindi	Latin
<i>Saktra</i>	?
<i>Karol ki lakri</i>	?
<i>Menoli ki chilka</i>	?
<i>Deshi babl</i>	<i>Acacia nilotica</i>
<i>Satyanashi</i>	<i>Argemone mexicana</i>
<i>Hingota</i>	<i>Balanites aegyptiaca</i>
<i>Plas ka chilka</i>	<i>Butea monosperma bark</i>
<i>Plas ka ful</i>	<i>Butea monosperma flowers</i>
<i>Aak ki lakri</i>	<i>Calotropis procera wood</i>
<i>Ker ki koyal</i>	<i>Capparis deciduas</i>
<i>Sitafal ka patti</i>	<i>Custard apple leaves</i>
<i>Kolvan</i>	<i>Dicrostachys cinerea</i>
<i>Thor</i>	<i>Euphorbia nerrifolia</i>
<i>Bar</i>	<i>Ficus bengalensis</i>
<i>Gengchi</i>	<i>Grewia villosa</i>
<i>Sarguro</i>	<i>Moringa concanensis</i>
<i>Karanji ka patti</i>	<i>Pongamia glabra</i>
<i>Safed Mushli</i>	<i>Portulaca tuberosa</i>
<i>Ikkar</i>	<i>Sesbania bispinosa</i>

The animal products used by healers in Rajasthan as vehicles are as follows :-

Hindi	English
<i>Deshi ghee</i>	Butterfat
<i>Chach</i>	Butter milk
<i>Dahi</i>	Curd
<i>Gaddi ka lid</i>	Donkey dung
<i>Admi ka paisat</i>	Human urine

The mineral products used by healers in Rajasthan in the preparation of medicines.

Hindi	English
<i>Met</i>	?
<i>Lal fitgiri</i>	Alaun, red
<i>Safed fitgiri</i>	Alaun, white
<i>Lal namak</i>	Salt, red
<i>Kua ki mitti</i>	Silt from wells

NATP Initiative in the Validation of EVM

Some of the ethno veterinary practices which have been validated under the Mission mode component National Agriculture Technology Project. The results of the experiments in few cases indicate the rationality and efficacy of ethno veterinary practices in solving problems of rural mass and are as follows:

Name of the plant/ ITK/EVM	Location	Indication	Conclusion
Urhul flower extract/ juice orally	Ranchi (Jharkhand)	Diarrhoea in goats	More effective than allopathic medicine
Takala (<i>Cassia tora</i>) flower	Maharashtra	Diarrhoea in goats	Moderately effective in

juice			parasitic diarrhoea.
Shisham (<i>Dalbergia sissoo</i>) paste in water	Shahjahanpur (UP)	Diarrhoea in cattle/ buffalo	70% cure less than allopathy
Sapota fruit (unripe) or jackfruit leaves along with common salt	Midnapore (WB)	Diarrhoea in cow	Claims are validated
Bael fruit mixed with water	Badaun, Shahjahanpur (UP)	Diarrhoea in animals	80% effective in diarrhoea
Dayadhpara roots	Kanke (Ranchi)	Helminthiasis	20% effective
<i>Ocimum gratissium</i> (Bantulsi) as paste)	Jharkhand hills	FMD (cattle)	Slightly effective
Camphor (with ghee)	Jharkhand	FMD (cattle)	Effective in mouth lesions
Peach leaves & fresh milk	Bareilly (UP)	Maggot wounds	Effective
Harida (<i>Terminalia chebula</i>) and Baheda (<i>Terminalia bellarica</i>) Decoction	Orissa	FMD (local application)	Effective
250 ml gingelly oil, 4 banana and 5-10 drops pig fat, <i>Gloriosa superba</i> and neem oil paste	Tamilnadu	FMD (local application)	Delayed healing (Not found effective)
Paste of babool bark and Jamun	U.P.	FMD	Cost effective and cure rate at par with allopathic medicine.
Pojo plant paste	Kanke (Ranchi)	Diarrhoea in goat & sheep	Cost effective, beneficial in diarrhoea
Mixture of fruits of madar and amaltas with garlic ajwain, black pepper fried in mustard oil.	Banda (UP)	Flatulence	Amaltas effective anthelmintic but not effective in flatulence.
Olekand, Tamrerid, salt, carbon, pig fat and sindir	Jharkhand	Garkati disease in cattle	90% effective better than allopathy
Kala Jeera paste	Badaun (UP)	Hemorrhagic septicaemia in cattle and buffalo	Adjunct therapy
Pigeon waste	Bareilly (UP)	Inducing oestrus	Not effective
Parched chick pea flour in butter milk	Nagaur (Rajasthan)	Retained placenta	Effective removal in 1-24 hrs.
Castor oil	Bulandshahr (UP)	Shoulder inflammation in bull	Effective
Harjore paste	Jharkhand	Fracture	Bone healing properties
Manu extract	Lahaul Spiti (HP)	Fracture	Bone healing properties .
Kumali (<i>Colocynthis vulgaris</i>) fruit pulp with neem oi (1:1)	Pudukkotai (Kerala)	Wound healing	Effective in maggot wounds.

Source: (Validation of indigenous technical knowledge in Agriculture compiled by Das, P and others Indian Council of Agri. Res., New Delhi, 2003).

Table 1. Ethnoveterinary uses of plants in Latin America less known in India.

Specific plant name (plant family) 'Hindi plant name'	Plant description	Use in Latin America (reference)
<i>Allium sativum</i> L. (Liliaceae) 'lasan'	Bulbous annual herb	Bulb used against fowl diseases.

<i>Annona squamosa</i> L. (Annonaceae) 'sarifa'	Small tree with greenish yellow flowers	The leaves are sometimes rubbed over floors or placed in hens nests to keep away vermin.
<i>Bixa orellana</i> L. (Bixaceae) 'latkan'	Small tree with white flowers	In brazil the pulp of the seeds is given to bulls before fights to make them more active. The plant may contain some excitant, which has not yet been investigated.
<i>Caladium bicolor</i> Vent. (Araceae)	A rhizomatous herb	Peasants use leaf decoction to get rid of external cattle festers caused by worms.
<i>Capsicum annuum</i> L. (Solanaceae) 'mirch'	Annual herb with white flowers	Curanderos use it as a maceration mixed with <i>aguardiente</i> (liquor) to cause purging in dogs, so as to make them good hunting dogs.
<i>Capsicum frutescens</i> L. (Solanaceae) 'mirch'	Annual herb with white flowers	Creole people use it for throat diseases of pigs.
<i>Cassia tora</i> L. (Caesalpiaceae) 'panvar'	Annual herb with yellow flowers	If the juice of mashed leaves is given to an animal, the ticks will jump off. This anti tick folklore seems exaggerated.
<i>Ceiba pentandra</i> (L.) Gaertn. (Bombacaceae) 'safed semal'	Medium-sized tree with greenish flowers	An infusion of the bark is given to cattle after delivery to help expel the placenta.
<i>Chenopodium ambrosioides</i> L. (Chenopodiaceae)	An erect aromatic herb with greenish or purplish flowers	Leaves are used to expel worms in animals.
<i>Crescentia cujete</i> L. (Bignoniaceae) 'bilayati bel'	Medium-sized tree with campanulate flowers	Cattle eat the fruit often during the dry season but it is said that it often causes abortion.
<i>Leucaena glauca</i> Benth. (Mimosaceae) 'subabool'	Medium-sized tree with whitish globular heads	There is a prevalent belief that if horses, mules or pigs eat any part of the plant, their hairs will fall out. Cattle are said not to be affected.
<i>Luffa acutangula</i> (L.) Roxb. (Cucurbitaceae) 'kalitori'	A climbing or trailing annual with yellow flowers	Unripe fruit is used against bowel disease of domestic fowl.
<i>Luffa aegyptiaca</i> Mill. (Cucurbitaceae) 'ghiya tori'	A Climbing or trailing annual with yellow flowers	Fruits are used the same way as <i>L. acutangula</i> .
<i>Mammea Americana</i> L. (Cluciaceae)	Small or medium sized tree with white fragrant flowers	The gum obtained from the bark is used to extract chiggers from the skin and kill ticks and other parasites external parasites of domestic animals.
<i>Nicotiana tabacum</i> L. (Solanaceae) 'tambaku'	Viscid annual herb with rosy or reddish flowers	Powdered tobacco is mixed with <i>aguardiente</i> (liquor) and given to dogs to make them better hunting animals.
<i>Paspalum conjugatum</i> P. Bergius (Poaceae)	Annual grass	Palikur people use it with other plants to prepare hunting dogs.
<i>Petiveria alliacea</i> L. (Phytolaccaceae)	An erect herb with rosy or white flowers	People believe when cows eat the plant, their milk will have an onion-like flavour.

Conclusion

There are immense opportunities for the development of the drugs on the basis of the ethno botanical leads. These drugs can be used for the effective animal health care at affordable cost to the peasantry of the country. Besides, the development of the Ethno veterinary practices would also provide income generation to the marginal farmers of the country. However, there is an urgent need

of the amalgamation of the modern Veterinary Medicine , Modern Science and the Ethno veterinary practices so as to derive synergy in the Animal Health Care

Further Reading:

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