

PLANT BASED VETERINARY MEDICINE FROM TRADITIONAL KNOWLEDGE OF INDIA

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A B S T R A C T

The WHO states that 74% of the plant based medicines have modern indications that correlate with their traditional, cultural uses. In the case of animals, veterinary science developed well in ancient and medieval India. Many works on the subject still exist in Sanskrit, Tamil and other languages of India. Right from the *Mahabharata* times sanskrit scriptures like "Asvavaidhyaka" "Ashwa Ayurveda sar sindhu" etc. are well classified and documented according to the principles of Ayurveda. Further, more numerous undocumented veterinary practices are in vogue in rural areas of India. The traditional sources contain thousands of recommendations for cure and treatment of animal diseases but few selective and effective are described in this paper. The plants used in the form of spices, cultivated or uncultivated stages are also listed. It would be beyond the scope of this paper for attempt to access the extent of the on going local uses of plant-based ethno-veterinary medicine.

INTRODUCTION

Indian culture is basically agriculture oriented and cattle play a significant role in this. Plants known for their medicinal and economic value have been used by local inhabitant for the amelioration of human/cattle suffering in the prehistoric era and had also played a vital role in every country's economy. Ethnobotanical investigations are bringing to the fore some uses of plants hitherto unknown or less known to the people of modern society. Of all the such information, maximum importance has been given to the new sources of food and medicines. Information regarding veterinary medicines, obtainable from the plants of India, has been recorded by Bodding (1927), Jain (1963) De (1969), Borthakur (1976), Pal (1981), Maheshwari (1986), and some others. All these workers have collected information from various tribes living in different ecological habitats. While throughout the World the primitive people, less affected by modern civilization, constitute the main sources of ethnobotanical information. Schultes (1960) emphasized the importance of surveying the literature in ethnobotany. Investigations by Sensarma (1989) in the *Agnipurana*, a sanskrit work, have brought out some information regarding plant-based veterinary medicines. Veterinary science developed well in ancient and medieval India, and many works on the subject still exist in the literature of the persian, sanskrit, tamil and other languages of India.

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SOURCES OF TRADITIONAL KNOWLEDGE FOR VETERINARY MEDICINES

Right from the *Mahabharata* times, veterinary medicine was practiced in India and documented in sanskrit scriptures and literature in vernacular languages. The information in sanskrit scripture like the "*Asvavaidyaka*" by Nakula, "*Palkapya* ", "*Garuda purana* ". and "*Asvayurveda sara sindu*" by Malldeva is well classified and documented according to the principle of the humoral theory of the Ayurvedic system. A few vernacular scriptures like "*Sahadeva pasu Vaidya Sasrtamu*" (Telugu) and "*Mattu Vaidya Bodhini* (Tamil) are dealing with traditional veterinary medicine. Apart from the above, hundreds of references on treating animals with the locally available plant resources can be traced in vernacular articles which do not have the authenticity and authorship of the literature. Furthermore, numerous undocumented veterinary practices are in vogue in rural areas of India.

Sources of plant based Indian traditional veterinary medicine

Sl.No.	Sources	Writers	Language
1.	<i>Asva vaidyaka</i>	Nakula	Sanskrit
2.	<i>Pala kpya</i>	Unknown	Sanskrit
3.	<i>Garuda purana</i>	Unknown	Sanskrit
4.	<i>Asvayur veda sar sindu</i>	Vysampayana	Sanskrit
5.	<i>Asvayur veda sar sindu</i>	Malldeva	Sanskrit
6.	<i>Sahadeva pasu vaidya sastramu</i>	Unknown	Telgu
7.	<i>Mattu vaidya bodhini</i>	Unknown	Tamil
8.	<i>Ani purana</i>	Unknown	Sanskrit
9.	<i>Ashva chikitsa</i>	Unknown	Sanskrit
10.	<i>Common practices by Indian Villagers</i>	Undocumented unauthentic	Local languages

Although Ayurvedic veterinary treatments are well documented in various sanskrit scriptures, language barriers prevent their effective use. Some information has been translated through for example, Singh (1993) gives an account of 36 medicinal preparations based on parts of the neem plant. The *Garuda Purana* is a sanskrit work which contains information on many spheres of ethnobotany. It is regarded as a *Mahapurana* by Chattopadhyaya (1923), Mitra (1912) and others.

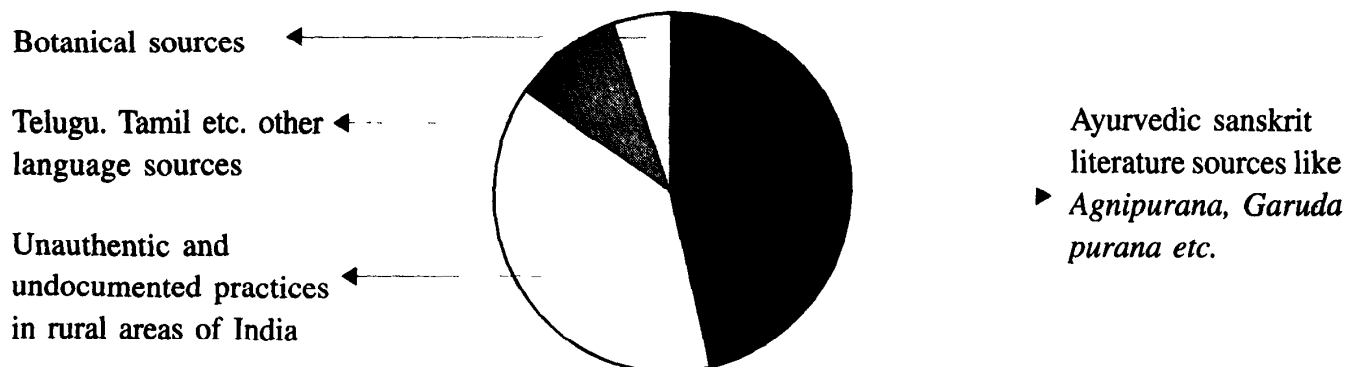


Figure : The sources of plant based veterinary medicine from traditional knowledge of India.

VETERINARY MEDICINES: PRESENT STATUS AND TRENDS

Over the last several decades, development and changes have replaced local knowledge and practices at an increasing and alarming rate. Many development programmes have proved to be unsustainable ; after funds run out, the local people are left in a dilemma. They can not afford or access the technologies and services introduced from outside, on the other hand they have forgotten their own “indigenous knowledge”.

To avoid such dilemmas, advocates of sustainable, bottom up development postulate that reviving indigenous knowledge within communities, and its transfer between communities, can provide opportunities for sustainable and cost effective solutions. The situation is also true for livestock development. Indigenous animal management and health care (Ethnoveterinary medicine) offer great potential for development. The characteristics and intensity of these plant based ethnoveterinary systems differ greatly among individuals, societies and regions.

It would be beyond the scope of this paper to attempt to access the extent of the ongoing local use of plant based ethnoveterinary medicine. This paper addresses this question only insofar as it provides the basis for and influences outside attempts to promote and apply “Plant based veterinary medicines”.

These attempts involve soliciting and selecting ethnoveterinary information remedies and practices, and using them to manage animal health and production.

MATERIALS AND METHODS

There is some information about the use of plants in the health care and treatment of animals/cattle which has been collected. The sanskrit names of the plants, as mentioned in the sources of traditional knowledge have been maintained, while the scientific names of the same have been obtained in consultation with the books and papers of the following authors : Chopra (1975), Majumdar (1927) Kirtikar & Basu (1981) ,Roy (1967) and Anonymous, (1976).

The treatment inventory from traditional sources includes about 10-12 types of diseases. The most frequently named ones are:

Diarrhoea (dast)

Afterbirth retention (Jer)

Poisoning (Jahar)

Prolapse of the uterus (aar nikalna)

Constipation (pet band hona)

Liver problems (piliya)

Pneumonia (Nimonia)

Rheumatism (Vadi)

Cough (Khassi)

Fever (Bukhar)

Indigestion (pet me dukh hona)

Anorexia (hiyapakki)

Blood in urine (Paisab me khun)

The traditional sources contain a few recommendations for general care and treatments of these diseases in animals as below:

- (a) A piece of wood of Sarala (*Pinus roxburghii* Sarg.), leaves of Nimba (*Azadirachta indica* Juss.), grains of Sarsapa (*Brassica napus* L.) pieces of Guggulu (*Commiphora wightii* Bhandari), Hingu (*Ferula asafoetida* Boiss.), along with Ghee (cleared butter) should be together tide around the neck of a horse. This is beneficial for the horse neck swelling.
- (b) To remove the fatigue of a horse, the animal should be fed with Guggulu (*Commiphora wightii*) and if the horse is fed with milk the animal would regain energy quickly.
- (c) Milk and Sali (*Oryza sativa* L.) constitute the best food for an animal.
- (d) To improve the health of a lean and thin horse, the animal should be given the powder of Guduchi (*Tinospora cordifolia* Miers.) with meals.
- (e) For immunity a horse should be fed with fruits of Haritaki (*Terminalia cheblua* Gaertn.) with salt and oil.

It appears that the purana followed the basic Ayurvedic principles that mostly diseases are caused by imbalance of Vayu (Wind), Pitta (bile), and Slesma (Phlegm) and that some diseases are caused by infection (agantujam). According to them the common medicines are :

- (a) The powder of Patola (*Trichosanthes dioica* Roxb.), Vaca (*Acorus calamus* L.), Chitraka (*Plumbago zeylanica* L.), Pippali (*Piper longum* L.) and leaves of Nimba (*Azadirachta indica* Juss.) should be mixed in water, and given to animals suffering from ailment caused by any of the three like (Vayu, Pitta & Slesma). This medicine is also effective in removing worms.
- (b) For digestive troubles Lasuna (*Allium sativum* L.) and other astringents give relief.
- (c) For vrana troubles The word Vranam means a bail, sore, wound and ulcer. Vrana may be caused by physiological disorder or by infection. The purana suggests the following herbal medicines for vranas :

The vrana caused by infection should be operated upon and the wound should be treated with the paste of the roots of Eranda (*Ricinus communis* L.), Rhizome of Haridra (*Curcuma longa* L.) Daruharidra (*Berberis aristata* DC.), Chitraka (*Plumbago zeylanica* L.) and Lasuna (*Allium sativum*).

The wound should be washed with a medicine prepared by pounding the grains of Tila (*Sesamum indicum*) and leaves of Nimba (*Azadirachta indica* Juss.).

(d) For haemorrhage : Decoction of leaves of Nimba (*Azadirachta indica* Juss.), wood of Khadira (*Areca catechu* Willd.), Patola (*Trichosanthes dioica* Roxb.) and Triphala for three days is good for stopping haemorrhage.

The purana in Ayurveda continue that the kasaya (a decoction with one part of a drug mixed with four, eight or sixteen part of water, the whole thing is boiled down untill one quarter is left) of the following also help to remove the diseases of elephants, horses and others like cows, goats, sheep etc.

OBSERVATION

Certain plants contain antimicrobial, anti-cancer, and immune modulating activities not found in our current drug arsenal. In addition plants (like fruits and vegetables) contain a variety of unexplained nutritional factors which nourish and strengthen the body. Herbal tonics, then offer a strengthening effect which simply isn't considered an aspect of disease treatment by modern, scientific medicine. The traditional sources of plant-based veterinary medicine provide unique knowledge for treatment of animal disease under veterinary medicine. Under observation Table-1 shows the list of plants utilized in veterinary medicine from Ancient sanskrit literature based on Ayurveda and in addition to the second way the observation Table 2 shows the list of plants used in animal healthcare from undocumented unauthorship and unauthentic practices in rural areas of India. Under observation the category of Table-2 (A), 2 (B) and 2 (C) include the list of the spices, cultivated plants and uncultivated plants used by healers in India in the preparation of veterinary medicine.

RESULTS AND DISCUSSIONS

Plant based medicine is undoubtedly the oldest form of medicine with thousands of years of history behind it. The discovery of medicinal plants may have occurred in a number of ways. Prehistoric people may have found therapeutic principles by trial and error or perhaps by watching animals "treat" themselves by eating special plants when ill. In fact, "Zoopharmacognosy" has revealed that instinct consistently provides certain animals with therapeutic information allowing them to use this natural system of medicine themselves. A combination of herbs may have two major advantage: The useful, therapeutic principles are concentrated by the additive effects of multiple herbs and at the same time, any toxic effect in one herb is diluted by the other herbs in the combination for these reason, herbal combinations offer efficacy combined with safety more often then single drugs. With the concern of ancient sources like *Agnipurana* or *Garuda purana* etc. contains information about the health care of horses and occasionally elephants, but nothing about the cattle. Absence of any discussion about the cattle is inexplicable. Perhaps horse received attention, as during the period of *Garuda purana* horse assumed much importance in warfare and in communication. The importance of horse in India increased from the later half of the 7th century ; it becomes the principle animal in war.

Another way to the advantage offered by herbal medications is in their unique actions. Until medical science can fully investigate the "miracles" attributed to herbs touted as anti-cancer and anti-viral agents. We can state with some caution that herbs are available to treat conditions against which conventional medicine is currently helpless. Unfortunately, veterinary herbal medicine has a

Table 1 : The list of plants utilized in veterinary medicines from Ancient sanskrit literature based on Ayurveda.

Plant Name	Family	Common / Sanskrit name	Plant part used	Use as in veterinary medicine
<i>Amaranthus tricolor</i> L.	Amaranthaceae	Genhari	Aerial Parts	Galactagogue
<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Punarnava	Aerial Parts	Cardiac stimulant
<i>Cleome gynandra</i> L.	Capparaceae	Arkpushpika	Aerial Parts	Anti rheumatic
<i>Curcuma longa</i> L.	Zingiberaceae	Haridra (haldi)	Rhizome	Carminative
<i>Datura stramonium</i> L.	Solanaceae	Dattur	Leaves	Nervine disease
<i>Adhatoda vasica</i> L.	Acanthaceae	Vasak	Leaf and Stem	Expectorant
<i>Leucas aspera</i> Roth	Lamiaceae	Dronapushpa	Whole plant	Anthelmintic
<i>Macrotyloma uniflorum</i> Lauk.	Fabaceae	Kulaththa	Aerial parts	Diuretic
<i>Melia azedarach</i> L.	Meliaceae	Mahanimba	Leaves	Vermifuge
<i>Mucuna pruriens</i> L.	Fabaceae	Kapi kachchu	Aerial parts	Anthelmintic
<i>Nyctanthes arhortristis</i> L.	Oleaceae	Parijat	Leaves	Expectorant
<i>Piper longum</i> L.	Piperaceae	Pippali	Fruits	Antibiotic and carminative
<i>Rauvolfia serpentina</i> Benth	Apocynaceae	Sarpagandha	Aerial parts	Nerve diseases
<i>Ricinus communis</i> L.	Euphorbiaceae	Erand	Leaves	Anthelmintic & Vermifuge
<i>Trachyspermum ammi</i> (L.) Sprague	Apiaceae	Ajmoda	Seeds	Antibiotic and expectorant

Table 2 (A): Spices used by healers in India in the preparation of veterinary medicines.

Used in veterinary medicine by healers	Hindi name / common name	English Name	Botanical Name	Family
Carminative	Rai (Seed)	Mustard	<i>Brassica juncea</i> Czern. & Coss.	Cruciferae
Counter irritant in lumbago	Lal mirch	Red pepper	<i>Capsicum annuum</i> L.	Solanaceae
Antibiotic	Haldi	Turmeric	<i>Curcuma longa</i> L.	Zingiberaceae
Anti spasmodic	Hing	Asafoetida	<i>Ferula asafoetida</i> L.	Apiaceae
Cough & Asthma	Kalajiri (Seed)	Black cumin	<i>Nigella sativa</i> L.	Ranunculaceae
Anti rheumatic	Kaskas	Poppy seeds	<i>Papaver somniferum</i> L.	Papaveraceae
Local apply for relaxed sore throat	Kali mirch	Black pepper	<i>Piper nigrum</i> L.	Piperaceae
Diarrhoea, Bronchitics	Ajwain (Fruits)	Lovage	<i>Trachyspermum ammi</i> (L.) Sprague.	Apiaceae
Digestive problems	Methi	Fenugreek	<i>Trigonella foenum-graecum</i> L.	Fabaceae
Expectorant	Soonth	Dried ginger	<i>Zingiber officinale</i> Boehmer.	Zingiberaceae

Table 2 (B): Cultivated plants used by healers in India in the preparation of veterinary medicines.

Used in veterinary medicine by healers	Hindi name/ Local name	English Name	Botanical Name	Family
Bloat (afra)	Pyaj/kanda	Onion	<i>Allium cepa</i> L.	Liliaceae
Rheumatism (Vadi)	Lehsun	Garlic	<i>Allium sativum</i> L.	Liliaceae
Skin disease (Khujali)	Sarson ka tel	Mustard oil	<i>Brassica campestris</i> L.	Cruciferae
Cough (Khassi)	Chai ki patti	Tea leaves	<i>Camellia theifera</i> L.	Theaceae
Indigestion (Pet me dukh)	Bijaura	Lemon leaves	<i>Citrus medica</i> L.	Rutaceae
Liver problems (piliya)	Kappas ki ful	Cotton flowers	<i>Gossypium indicum</i> L.	Malvaceae
Diarrhoea (dast)	Jhuni mehendi	Old henna leaves	<i>Lawsonia alba</i> L.	Lythraceae
Cough (Khassi)	Jarda	Tobacco	<i>Nicotiana tabacum</i> L.	Solanaceae
After billh retention (Jer)	Gur	Jaggery (sugarcane)	<i>Saccharum officinarum</i> L.	Poaceae
Prolapse of the uterus (aar Nikalna)	Deshi chakkar	Sugar	<i>Saccharum officinarum</i> L.	Poaceae
Liver problems (Piliya)	Tilli ka tel	Sesame oil	<i>Saccharum officinarum</i> L.	Pedaliaceae

Table 2 (C) : Wild & naturalized plants used by healers in India in the preparation of veterinary medicines

Hindi name / Local name	Used in veterinary medicine by healers	Botanical Name	Part used	Family
Deshi babool	Rheumatism (Vadi)	<i>Acacia nilotica</i> L.	Wood	Mimosaceae
Satyanashi	After birth retention (Jer)	<i>Argemone mexicana</i> Tourn. ex L.	Seed	Papaveraceae
Hingota	Constipation (Pet band hona)	<i>Balanites aegyptiaca</i> Delile	Whole plant	Simaroubaceae
Plas ka chilka	Fever (Bukhar)	<i>Butea monosperma</i> Koeing	Bark	Fabaceae
Plas ka ful	Cough (Khassi)	<i>Butea monosperma</i> Koeing	Flowers	Fabaceae
Aak ki lakri	Bloat (Afra)	<i>Calotropis procera</i> R.Br.	Wood	Asclepiadaceae
Ker ki koyal	Numonia	<i>Capparis decidua</i> L.	Leaves	Capparidaceae
Thor	Skin problem (Khar Khujali)	<i>Euphorbia neriifolia</i> L.	Latex	Euphorbiaceae
Bar	Fever (Bukhar)	<i>Ficus benghalensis</i> L.	Wood	Moraceae
Gengchi	(Cough, Khassi)	<i>Grewia villosa</i> Willd.	Whole plant	Tiliaceae
Sarguro	Fever (Bukhar)	<i>Moringa concanensis</i> Adans.	Whole plant	Moringaceae
Karanji ka patti	Liver problems (Piliya)	<i>Pongamia pinnata</i> (L.) Pierre.	Leaves	Fabaceae
Safed Mushli	Rheumatism (Vadi)	<i>Portulaca tuberosa</i> L.	Roots	Portulacaceae
Ikkar	Cough & Fever (Khassi Bukhar)	<i>Sesbania bispinosa</i> Scop.	Leaves	Fabaceae

long way to go before the doses and protocols are formalized. It is not necessary safe to base prescriptions proportionally by comparison to human body weights.

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भारतीय परम्परा में पादप आधारित पशु चिकित्सा की औषधि एल.के. शर्मा, एन.के. दधीचि एवं अश्विनी कुमार

सार संक्षेप

विश्व स्वास्थ्य संगठन के अनुसार पादप आधारित औषधियों में 74 प्रतिशत आधुनिक संकेत में परम्परागत सांस्कृतिक उपयोग के अनुरूप है। प्राचीन एवं मध्यकालीन भारत में पशु चिकित्सा विज्ञान सुविकसित था। संस्कृत, तमिल एवं अन्य भारतीय भाषाओं में इस विषय पर आज भी पुस्तकें उपलब्ध हैं। महाभारत युग से ही "अश्ववैधक" "अश्व आयुर्वेद सार सिन्धु" आदि आयुर्वेदीय सिद्धान्तों के अनुकूल अच्छी तरह वर्गीकृत व प्रलेखित हैं। भारतीय ग्रामांचल में अनेक अप्रलेखित पशु चिकित्सा प्रणाली प्रचलित हैं। पारम्परिक स्रोतों में पशु रोगों की चिकित्सा हेतु हजारों विधियां हैं। उगाए गए या प्राकृतिक रूप से उपलब्ध मसालों के रूप में काम आने वाले पौधों की सूची भी है।