

# Ethnoveterinary Study of Medicinal Plants in Agra District

## Abstract

Since long, plants have served as medicines to almost all ailments amongst human as well as cattle. The knowledge of healing power of plants has been passed on from one generation to other since ancient times. We know that a good portion of world population still has no or very little availability of health care services. In such regions, the traditional knowledge of medicinal plants is the only options. Moreover, medicinal plants are also a part of modern medicine system and are preferred over allopathic ones.

The use and importance of plants in cattle health care is the focus of this study. Various plants are used as ethnomedicines for different types of cattle ailments. Such plants were identified and analysed along with their application method leading to ethnomedicine study. This work is an attempt to document the plants used for treatment of ailments in cattle in the study area.

**Keywords:** Cattle, Health Care, Ethnoveterinary, Medicines

## Introduction

India is a country with immensely rich heritage be it cultural, educational, science or spiritual. Only recently have we started to take a serious look at this invaluable treasure which has been with us from time immemorial. There is literature available on every aspect of life. One such field is veterinary science. Studies suggest that in India, domestication started around seven thousand years back. The deep involvement of ancient folk in domestication of animals is proven by the fact that cow was considered as mother. Owning of cattle was a matter of pride.

Domestication of animals led to the development of veterinary science. There are many evidences which prove that animal husbandry and veterinary science had a good level of advancement. The system of medication based on plants was in practice. A lot of literature on animal care and disease cure can be found in ancient scriptures like vedas and puranas. Palakapya, who specialized in elephant medicine wrote a complete treatise called Hastya Ayurveda. Also known as Gaza Ayurveda, it deals with elephant medicine and surgery.

Shalihotra, who is considered the father of Indian veterinary science, was specialist in horse medicine. He reveals all the symptoms and treatments in the treatise known as Haya Ayurveda. The veterinary science was also given due place by the kings in different times. There are evidences that King Ashoka had a hospital constructed for animals, probably the first veterinary hospital in the world.

This ancient knowledge has been used by the common folk of India for the treatment of the cattle since long. It has been passed on from generation to generation verbally and by practice. Most of the methods adopted for treatment use parts of plants. Based on the flora available in the region, the medicines have been developed and used. With time, the methods of use and process of preparation have changed accordingly. Many such methods have no documentation and are at times restricted to particular areas only. Ethnoveterinary medicines are based on traditional knowledge and practices. According to McCorkle, ethnoveterinary research and development involves folk knowledge and beliefs (theories, taxonomies, definitions, diagnoses, etc.), practices, technology and resources, social organization and so forth pertaining to any aspect of animal health among species raised or managed by human beings [9].

These medicines have served the farmers and cattle owners specially in those areas which have very less or no access to health care system. Moreover, these medicines are easily available locally and expense on them is zero or very little. Thus, in Indian scenario where most of the cattle owners are poor and cannot afford modern medicines, such



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medicines are the only option. Use of ethnoveterinary medicines has also been reported in other parts of the world. Scientific investigations on folk veterinary beliefs and practices started in mid-seventies [9]. Various studies focusing on different facets of ethnoveterinary research and development were carried out. A study by M Bahmani describes the use of ethnoveterinary medicines for herd dogs in Iran. It advocates the need of more research so that new drugs may be developed for human and animal use [12]. Chah conducted a study in Nigeria and found that males were responsible for disease management in that area. Blending of orthodox drugs with traditional treatment is suggested [5]. Matekaire and Bwakura compiled a field manual of treatment of diseases in farm animals describing remedies, methods of preparation and administration of ethnoveterinary medicines in Bindura, Zimbabwe [8]. A study in Southern Zambia by M Syakalima documented the types of plants used for ailments treatment in rural Zambia. The study suggested the validation of these practices for cost reduction of treatments [10]. An ethnoveterinary study was taken up in Turkey by Sinmez focusing on plants used for dermatological diseases. The study reveals 26 species of herbs, trees and green algae used by breeders [3]. Guillermo undertook a study to catalogue, analyse and disseminate the knowledge of plants used in Granada, Spain. The study identifies 60 different plant species. It also shows some evidence of disappearance of some ethnoveterinary practices [2].

Because these practices and methods of veterinary medicines are not documented, it is a matter of serious concern. Retaining them from all sources throughout the country will help in new researches, combining the scientifically developed methods with indigenous knowledge. There is also a danger of losing this knowledge forever. Exploitation of natural resources in the course of development has led to the extinction of many plant species. Such species could have high medicinal values. Migration of younger generation to cities can also be a factor in losing this indigenous knowledge. With no one to transfer to and lack of documentation, this knowledge might just vanish [8]. This study aims to identify plants used for ethnoveterinary medicines and emphasise the need of documentation, research and development of ethnoveterinary methods so that they may be preserved and synthesized with modern medicine.

#### **Materials and Methods**

For this study, area falling under Agra district in Uttar Pradesh was chosen. Agra is a famous city mainly because of historical monuments in and around it viz. Taj Mahal, Agra Fort, Sikandra, Fatehpur Sikri and others. Agra is situated on the banks of river Yamuna. It lies in 27.1767° N latitude and 78.0081° E longitude. Its area is 87 km<sup>2</sup>. Agra has four seasons, namely, summer (May-Sept), autumn (Oct-Nov), winter (Dec-Feb), and spring (March-April). The rainfall is distributed in the months from June to September. The area receives its rainfall through monsoon winds. The temperature in

summer goes as high as 47-48°C, whereas winter sees temperature as low as 1-2°C.

The population consists of melange of communities comprising of brahmins, yadavs, jats, dalits and many more. The villages generally consist of one community with a small number of folks from other communities. According to census 2011, the population of the Agra district is 44.19 lakhs. Of this, the urban population is 20.24 lakhs and rural population is 23.94 lakhs which is approximately 54 % of total population.

This study was undertaken in the rural areas of Agra. Information regarding ethnoveterinary medicines was obtained by undertaking field surveys in 2017 and 2018 at different times of the year. Four villages in Agra were selected for data collection. They are; Midhakur, Bichpuri, Kiroali and Anwal Kheda. Interviews with the individuals of age group beyond 35 years were held. These included house hold women, farmers, cattle owners and traditional healers. Women had been playing a major role in the maintenance of livestock in this area. Milking of cattle, feeding and cleaning are usually done by the women folk. And as such they have a pretty sound knowledge about the health of the animals. Generally, they are the first one to report an illness in the cattle. Davis reported in a study in Afghanistan that women has same knowledge of diseases in cattle as men [6]. Another study in Nigeria by Chah found that in cases of small ownership of up to 10 animals, males of the family were responsible for disease management [5].

The participating individuals were asked about the occurrence of the common diseases and the plants used for treating them. They were asked about the diseases they could diagnose and treat. Generally, the livestock owners were aware of the symptoms of the diseases, season of occurrence and many things related to prevention and cure of disease. They had a good idea of the use of different parts of the plants for treatment of diseases. The cattle owners could cure many commonly occurring diseases like diarrhoea, worms, reproductive problems, wounds etc. Healers were consulted in cases of non-responsiveness of the animal. It was also observed that most of the villages had a person or two who had expertise in specific situation of the animal, specially related to delivery problems. The veterinary doctor or the clinic was approached only in cases of complications which they could not handle. The treatments obtained from individuals were verified by the veterinary personal. Based on the common names and taxonomy, the plants were identified using the literature available.

#### **Results and Discussion**

Based on the interaction with the local people and the literature available, 28 plants commonly used as ethnoveterinary medicines for treatment of variety of ailments, were identified. These plants belong to 20 families. Different parts of the plants- leaves, fruits, bark, roots and seeds were used for treatment depending on the type of disease. The preferred methods of preparation of medicines and administration are decoction of plant part and

administering it orally and preparation of paste for topical administration

It was also observed that some plants are used for treatment of more than one illness. *Allium sativum*, commonly known as Garlic, is used in many forms to cure many ailments [7]. Tar, obtained from *Pinus nigra*, has been reportedly used for foot and mouth disease, mouth sores, mange, replant for snakes, mice and ticks [1]. *Aloe vera* has been used

as medicine for treatment of indigestion, foot fungus, wounds and inflammation [12]. *Asparagus racemose* also called Satavar is used to treat lactation and reproductive ailments. *Azadirachta indica* or Neem treats urticaria, wounds and tumours.

The information obtained is presented in tabular form giving the common name, botanical name, family and the ailment for which it is used.

S. No.	Common Name	Botanical Name	Family	Ailment/Usage
1	Adusa	<i>Adhatoda vassica</i>	Acanthaceae	Cough. Mixture of juice with millet flour and rock salt.
2	Poppy	<i>Argemone Mexicana</i>	Papaveraceae	Constipation. Whole plant boiled in water.
3	Bel Tree	<i>Aegle marmelos</i>	Rutaceae	Stomach worms. Crushed leaves with buttermilk.
4	Babool	<i>Acacia nilotica</i>	Mimosaceae	Bleeding urine. Crushed leaves with turmeric.
5	Satavar	<i>Asparagus racemose</i>	Alliaceae	Lactation and reproductive system disorders. Tuber powder with fodder.
6	Neem	<i>Azadirachta indica</i>	Meliaceae	Urticaria, wounds and tumours. Crushed leaves with water.
7	Grithkumari	<i>Aloe vera</i>	Liliaceae	Normal delivery. Leaves decoction.
8	Dhak	<i>Butea monosperma</i>	Fabaceae	Stomach worms. Crushed seeds with buttermilk.
9	Madar	<i>Calotropis procera</i>	Asclepiadaceae	Removal of placenta after delivery, intestinal worms. Latex and leaves.
10	Amaltas	<i>Cassia fistula</i>	Caesalpiaceae	Diarrhoea and dysentery. Fruit pulp.
11	Chana	<i>Cicer arietinum</i>	Fabaceae	Increase milk quantity. Soaked seeds.
12	Doobghas	<i>Cynodon dactylon</i>	Poaceae	Intestinal disorders. Paste of whole plant.
13	Dhania	<i>Coriandrum sativum</i>	Apiaceae	Bleeding dysentery. Mixture of coriander powder, barley flour and water.
14	Dhatura	<i>Dhatura metal</i>	Solanaceae	Fever. Warm mixture of crushed dhatura root and black pepper.
15	Bhangra	<i>Eclipta prostrata</i>	Asteraceae	Cuts and sores. Paste of whole plant.
16	Bargad	<i>Ficus benghalensis</i>	Moraceae	Pyorrhea. Latex applied to gums.
17	Peepal	<i>Ficus religiosa</i>	Moraceae	Tongue sores. Ash of bark applied to the tongue.
18	Binola	<i>Gossipium hirsutum</i>	Malvaceae	Better milk quality. Seed with fodder.
19	Gurhal	<i>Hibiscus rosa sinesis</i>	Malvaceae	Twitching. Grinded bark is administered with water.
20	Papri	<i>Holoptelea integrifolia</i>	Ulmaceae	Removal of ecto-parasites. Leaf juice is applied on skin.
21	Surajmukhi	<i>Helianthus annuus</i>	Asteraceae	Smooth delivery. Seed oil.
22	Mehendi	<i>Lawsonia inermis</i>	Lythraceae	Maintain pregnancy. Leaf powder with fodder.
23	Bangobhi	<i>Launea pinnatifida</i>	Asteraceae	Swelling of throat. Boiled mixture of whole plant with Amarbel.
24	Tulsi	<i>Ocimum sanctum</i>	Lamiaceae	Fever. Decoction of leaves with black pepper.
25	Chaval	<i>Oryza sativa</i>	Poaceae	Swelling and abscesses. Powdery mixture with rock salt applied with bandage.
26	Arandi	<i>Ricinus communis</i>	Euphorbiaceae	Indigestion. Mixture of its oil and milk.
27	Genda	<i>Tegetus erecta</i>	Asteraceae	Pus in ears. Warm juice of leaves.
28	Ashwagandha	<i>Withania somnifera</i>	Solanaceae	Cold and cough. Root decoction.

### Conclusion

Ethnoveterinary medicines are used widely in India and throughout the world. With more work being done on recognition of these methods, use of plants and plant products is progressively gaining popularity and acceptance. Some of the reasons for

this are the high cost of allopathic drugs, non-availability in remote areas and the side effects caused by these drugs. It has been observed that microorganisms develop resistance to chemical drugs due to continuous use making the drug ineffective and a cause of side effects. This requires that alternative

methods should be researched upon leading to the development of sustainable drugs.

Ethnomedicines are a feasible solution to the problem, but generally, most of the ethnoveterinary medicines do not carry any validation. It is because of lack of documentation and validation of these medicines. They have not been clinically tried and hence cannot be called fully safe and effective. There are evidences and few authors have proved that in some cases the results of indigenous methods have shown similar or better results than those prescribed by modern science. Then, there are instances where traditional methods don't work and modern medicine give desired results. The synthesis of two might help in developing methods which are culturally and economically suited for better health care practices. The idea of synthesising attains importance because generally ethnoveterinary practices are based on the identification of symptoms without proper investigation of cause of disease. Modern science equipped with better diagnostic techniques can be a fine tool in generating effective drugs. It is necessary to document, standardize and validate the ethnoveterinary knowledge for its full integration with modern veterinary medicine.

Development and research in the field of ethnoveterinary can be a tricky task. It can only be carried out through a well-planned holistic approach undertaken by government agencies and concerned institutes. It also requires interdisciplinary attention. Observations from various concerned disciplines needs to be integrated. The research must involve understanding and recognizing the evolution, application and management of ethnoveterinary medicines from the community prospective [11]. More researchers need to take up projects concerning documentation and testing of this knowledge. Measures can be taken where the local healers, farmers, livestock raisers and owners may be encouraged with recognition and prize if they come forth with valuable information regarding indigenous medication system and practices. It will also help the new researchers to carry out further investigation in this field. Identification of effectiveness of drug on a definite specie or variety of species can be checked through trials. Clinical tests by using ethnoveterinary medicines can establish the measure of dosage, diseases that can be cured and correct methods of application.

Identification and documentation of the ethnoveterinary methods is also important from intellectual property rights perspective. The holders of this valuable knowledge should be benefitted in one way or other. Because such methods and medicines are popular only locally, veterinarians have little information regarding these. Documentation of ethnoveterinary practices will help to educate them about the same prevalent in a particular area. This in turn will help in synthesis of two systems. It will also

help to preserve the indigenous knowledge and the flora of that particular region.

#### Endnotes

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