



Ethno-veterinary medicinal plant species of Hadgaon Taluka, Nanded District, Maharashtra, India

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ABSTRACT

Ethno-veterinary medicine is a system which is based on folk beliefs, traditional knowledge, skills, methods, and practices used for curing diseases and maintaining health of animals. The present study deals with the documentation of novel Ethno-veterinary practices from Hadgaon taluka belonging to Nanded district. The 29 ethno-veterinary medicinal plants belonging to 25 families have been recorded against 31 livestock diseases. These plant based medicines are readily available and found effective against various domestic animal diseases. The livestock plays an important role in the life of farmer and tribal people.

Keywords: Animal diseases, Ethno-veterinary practices, Hadgaon Taluka, Ethno-veterinary medicinal plants

INTRODUCTION

Ethno-veterinary medicine is a system which is based on folk beliefs, traditional knowledge, skills, methods, and practices used for curing diseases and maintaining health of animals. The term 'Ethno-veterinary' was introduced by Dr. Constance M. McCorkle. It was first used in her article "An introduction to Ethno-veterinary research and development". It is used regarding indigenous knowledge that is passed on from generation to generation through verbal verdicts (McCorkle, 1986).

Some reports of documentation of ethno-veterinary practices of various parts of Maharashtra are available such as in Buldhana district (Patil *et al.*, 2010; Marathe *et al.*, 2010), Chandrapur, Nagpur and Gadchiroli district (Kulkarni *et al.*, 2014), Akola district (Jambu and Wath, 2018). In Marathwada region, very few attempts have been made for documentation of ethno-veterinary information such as in Jalna district (Deshmukh *et al.*, 2011).

According to World Health Organization, at least 80% of people in developing countries depend on indigenous practices for animal diseases. The livestock plays a crucial role in farmers and tribal people life.

The livestock is used for milk production, farming operations and to pull heavy loads. The medicinal plants have been widely used as a primary source of prevention and control of livestock diseases for several centuries. Traditional veterinary medicine knowledge is handed down orally from one generation to other which can be found in remote areas where no modern facilities are available. This knowledge is disappearing rapidly due to socio-economic, environmental and technological changes. Now a time, the young generation is not showing interest in conserving this knowledge therefore, it becomes essential to document it before vanishing.

MATERIAL AND METHODS

Several field trips were undertaken in different villages of Hadgaon taluka during January- 2015 to July-2018. The information was collected from

knowledgeable, experienced and elderly rural persons. Ethno-veterinary data were collected by conducting interviews with farmers, experienced elder persons of villages and traditional healers (*Vaidu*). The questionnaire was administered to them in Marathi which is the local language of this area.

The plants were collected and identified with the help of standard floras (Naik, 1998; Yadav and Sardesai, 2002).

Study area:

This study was conducted in Hadgaon taluka in Nanded district (Figure 1). It has an average altitude of 1358 feet. The co-ordinates of Hadgaon taluka is 19.5°N 77.67°E (Wikipedia). The total area covered by tehsil is 15,805.416 hectares. According to live stock census, 2012, average livestock per village in Nanded district is 747 (Anonymous, 2012).

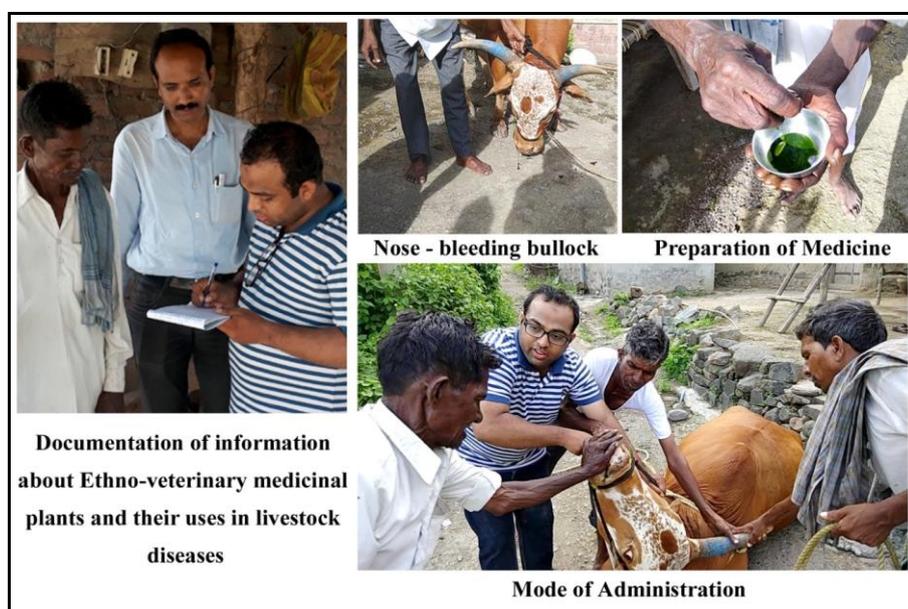


Figure 1: Location of the study area (Hadgaon taluka) in Nanded district

Enumeration:

The Ethno-veterinary medicinal plant species recorded are arranged in tabular form. The information about Botanical names along with local

name, family, part used along with mode of administration with local ethno-veterinary use and recorded use are given (Table 1).

Table 1: Plant species identified as ethno-veterinary medicinal plants

SN	Botanical Name, family and local name of plant	Part Used	Local Ethno-Vet. use	Mode of Use and Administration route	Recorded use
1	<i>Alangium salviifolium</i> (L.f.)Wangerin [Alangiaceae] Ankol	Fruit	Vomiting	The <i>Alangium salviifolium</i> fruit is given with betel leaf orally	Leaf in opacity of cornea (Alagesaboopathi, 2015)
2	<i>Allium cepa</i> L. [Alliaceae] Kaanda	Bulb	Colic	The paste of its bulb is mixed with bulb of <i>Allium sativum</i> L. with addition of fruit juice of <i>Citrus limon</i> (L.) Burm.f. applied inside the anus of cattle topically	Gastroenteritis (Bhuvanawari <i>et al.</i> , 2015); dysentery, swelling in shoulder, fracture (Mangal, 2015); to stimulate the oestrus cycle (Mir, 2014), to kill ectoparasites (Odelu, 2015); diarrhoea (Pandit, 2010)
3	<i>Allium sativum</i> L. [Alliaceae] Lassun	Bulb	Colic	The paste of its bulb is mixed with bulb of <i>Allium cepa</i> L. with addition of fruit juice of <i>Citrus limon</i> (L.) Burm.f. applied inside the anus of cattle topically	Inappetence (Balakrishnan <i>et al.</i> , 2009); Fowl box and anorexia (Bhuvanawari <i>et al.</i> , 2015); anthrax and ephemeral fever (Devendrakumar & Anbazhagan, 2012); arthritis (Pandit, 2010)
4	<i>Azadirachta indica</i> A.Juss. [Meliaceae] Kadu limb	Bark	Mastitis	the bark paste is mixed with cow urine or goat urine and applied topically	-
5	<i>Blepharis repens</i> (Vahl) Roth [Acanthaceae] Hadsan	Leaf	Bone fracture	The leaf is given orally with green gram or black gram	-
6	<i>Bombax ceiba</i> L. [Bombacaceae] Kaateshevari	Bark	Joint pain, back pain and anorexia	The bark juice is given orally	Bone fracture and dysentery (Gautam & Ricchariya, 2015); fracture, sprain (Mangal 2015); dysentery (Patil & Deshmukh, 2015)
7	<i>Caesalpinia pulcherrima</i> (L.) Sw. [Caesalpinaceae] Gulturre/ shankasur	Leaf	Gout	The leaf paste is given orally	-
8	<i>Cardiospermum halicacabum</i> L. [Sapindaceae] Madkephodi	Seeds	Kidney stone	2-3 seeds given orally	-
9	<i>Careya arborea</i> Roxb. [Lecythidaceae] Kumbhai	Bark	Tick	The bark paste is applied topically over it	-
10	<i>Cassia fistula</i> L. [Caesalpinaceae] Bahava	Leaf	Mouth ulcer	The leaves are rubbed on tongue of the cattle topically	Tongue sore (Pandit, 2010)
11	<i>Citrus limon</i> (L.) Osbeck [Rutaceae] Limbu	Fruit, Leaf	Mouth ulcer, Colic, Foot and Mouth Disease (FMD)	The fruit rubbed on tongue of the cattle topically, The fruit juice is mixed with bulb of <i>Allium sativum</i> L. and <i>Allium cepa</i> L. and applied topically inside the anus of cattle with hand and the net formed inside is broken, The leaf paste is mixed with salt and rubbed on mouth for mouth disease and the decoction of the same is given orally in foot disease	blood dysentery (Alagesaboopathi, 2015), indigestion, swelling in shoulder, fracture (Mangal, 2015), hidura disease caused by worms (Meena, 2014)

Table 1: Continued...

SN	Botanical Name, family and local name of plant	Part Used	Local Ethno-Vet. use	Mode of Use and Administration route	Recorded use
12	<i>Curcuma longa</i> L. [Zingiberaceae] Hadhad	Rhizome	Mouth ulcer, Body itching and neck hair loss	The turmeric with a pinch of salt mix together and rubbed on tongue of the cattle topically, The paste of rhizome powder and lime stone is applied on body topically	Foot and mouth ulcers, tympany (Balakrishnan <i>et al.</i> , 2009); eye diseases, fowl, ranikhet disease and anorexia (Bhuvanawari <i>et al.</i> , 2015); bone fracture, maggot of infected sores, corneal opacity (Devendrakumar & Anbazhagan, 2012); to wash the wart in poultry (Jai sunder <i>et al.</i> , 2014), corneal opacity, horn cancer (Lakshmi Naryana <i>et al.</i> , 2015)
13	<i>Datura stramonium</i> L. [Solanaceae] Kaadha dhotra	Leaf	Galactagogue	leaf juice is applied over back topically	-
14	<i>Dioscorea bulbifera</i> L. [Dioscoreaceae] Shankar jath	Bulbils, Tuber	Wound, Internal injury	The paste of bulbils is tie on wound. Tuber paste is tie on for 2 to 3 days on affected area	-
15	<i>Ficus benghalensis</i> L. [Moraceae] Wad	Latex	Bone fracture	The latex of <i>Ficus benghalensis</i> L. mixed with latex of <i>Ficus racemosa</i> L. and tie on affected leg with bandage	-
16	<i>Ficus racemosa</i> L. [Moraceae] Umbar	Latex	Bone fracture	The latex of <i>Ficus racemosa</i> L. mixed with latex of <i>Ficus benghalensis</i> L. and tie on affected leg with bandage	-
17	<i>Foeniculum vulgare</i> Mill. [Apiaceae] Soph	Seeds	Dyspepsia	The seeds paste is mixed with jaggery and soda and given orally 3 times a day	-
18	<i>Grewia hirsuta</i> Vahl [Tiliaceae] Pichondi	Leaf	Diarrhoea	The leaf and curd or buttermilk paste is given orally	-
19	<i>Momordica dioica</i> Roxb. ex Willd. [Cucurbitaceae] Kurtule	Fruit	Piles	The slices are cut and tablets prepared and given orally 3 times for 3 days	Mouth ulcer (Odelu, 2015)
20	<i>Mucuna pruriens</i> (L.) DC. [Fabaceae] Khajkuiri	Seeds	Wound itching	The seed paste is tie on wound	-
21	<i>Nicotiana tabacum</i> L. [Solanaceae] Tambaku	Leaf	Conjunctivitis	The leaf is chewed by person and spited into eye of cattle (ocular route)	Germicidal (To kill ectoparasites) (Gautam & Ricchariya, 2015); insect propellant (Kaladevi & Preetha, 2015)
22	<i>Opuntia elatior</i> Mill. [Cactaceae] Nagphani	Leaf	Wound	The thorns of leaf burn first and then by heating tie on the wound	Bone fracture (Marathe <i>et al.</i> , 2010)
23	<i>Pergularia daemia</i> (Forssk.) Chiov. [Asclepiadaceae] Gutguti	Latex, Leaf, Flower	Whiteness of eye, sprain (Lachak), nose bleeding, galactagogue, no hair on tail due to infection	The latex drops put into eye (ocular route), If left leg affected, leaf juice is putted in right ear and vice versa (Otic route), The 3 leaves juice is mixed with 1 tola mercury, this is poured into nostrils of cattle (Nasal route), The flower is given with jowar bread orally, The leaf juice is mixed with turmeric powder and limestone and applied topically for 3 days	-

Table 1: Continued...

SN	Botanical Name, family and local name of plant	Part Used	Local Ethno-Vet. use	Mode of Use and Administration route	Recorded use
24	<i>Piper betle</i> L. [Piperaceae] Nageli	Leaf	Vomiting	The betel leaf given orally with <i>Alangium salviifolium</i> (L.f.)Wang fruit is given orally	-
25	<i>Punica granatum</i> L. [Punicaceae] Daadhimb	Leaf	Shrews bite	The leaf juice is given orally for 3 days	Ecto-parasiticide (Balakrishnan <i>et al.</i> , 2009)
26	<i>Tagetes erecta</i> L. [Asteraceae] Zendu	Leaf	Maggots in wound	The leaf juice is tie on wound or the leaf can applied with bandage	-
27	<i>Tinospora cordifolia</i> (Willd.) Miers. [Menispermaceae] Gudvel	Whole plant	Fever	The decoction is given orally	Leaves in anthrax, bone fracture; stem in insect bite (Devendrakumar & Anbazhagan, 2012); whole plant in FMD & infusion (Lakshmi Naryana <i>et al.</i> , 2015); stem in skin diseases (Pandit, 2010); leaves in galactagogue (Patil & Deshmukh, 2015)
28	<i>Typha angustifolia</i> L. [Typhaceae] Kasai	Root	Kidney stone	The fine root powder is given orally early in the morning for 3 days	-
29	<i>Ventilago denticulata</i> Willd. [Rhamnaceae] Saakadhvel	Leaf	Skin burn	The ash of green leaves is mixed with coconut oil and applied topically on affected area	-

RESULTS AND DISCUSSION

For the validity of data during interview, the information was recorded and revisited at least 2 times for confirmation of the information. The irrelevant information was rejected and only relevant information was taken into consideration for further study. The 29 ethno-veterinary medicinal plants belonging to 25 families have been recorded against 31 livestock diseases. The dosages depend on the age of livestock animal. The oral mode of administration

found to be used mostly (37.83%) followed by topical mode of administration (32.43%) (Table 2, Figure 2). In present study diverse ethno-veterinary medicinal plant species were found belonging to diverse plant families. Alliaceae, Moraceae, and Solanaceae have been represented by two plant species respectively. The most commonly used plant parts for the preparation of ethno-veterinary plant-based medicine were leaves (40.54%) followed by fruit (10.81%) (Table 3, Figure 3).

Table 2: Mode of administration of ethno-veterinary medicinal plant species

Mode of Administration	Frequency of response	Percentage (%)
Oral	14	37.83
Topical	12	32.43
Nasal	01	2.70
Ocular	02	5.40
Tie on	07	18.91
Otic	01	2.70
Total	37	

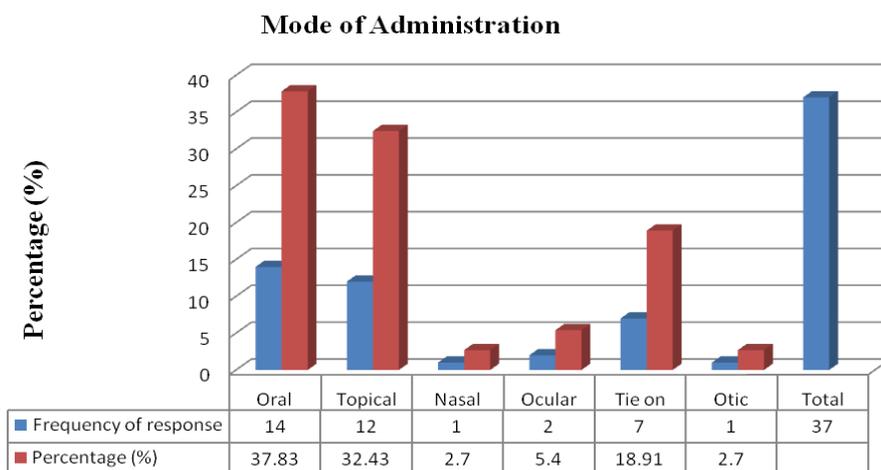


Figure 2: Mode of administration of ethno-veterinary medicinal plant species

Table 3: Plant parts used by traditional healers

Parts used	Percentage (%)
Root	2.70
Leaf	40.54
Flower	2.70
Fruit	10.81
Seed	8.10
Tuber	2.70
Rhizome	5.40
Bulb	5.40
Bulbils	2.70
Bark	8.10
Latex	8.10
Whole plant	2.70

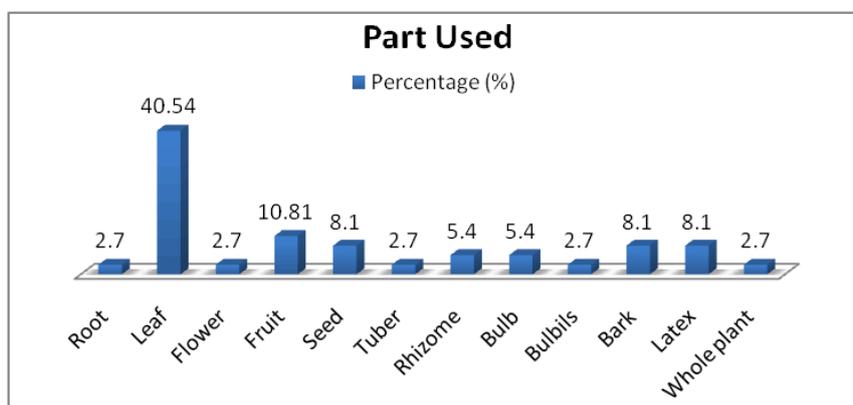


Fig. 3: Plant parts used by traditional healers (*Vaidu*)

CONCLUSION

The far-reaching field survey on Ethno-veterinary medicinal (EVM) plant species was conducted in Hadgaon taluka of Nanded district. This study

indicates that there are only a few traditional healers (*Vaidus*) having knowledge about the animal healthcare and related EVM plant species and the practitioners are very rare, farmers have some information. There is urgent need of conserving such

unique knowledge for economic development and plant based medicines. Most of the ethno-veterinary medications were mono-herbal formulations and some were poly-herbal formulations used against livestock diseases.

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Conflict of Interest

The author declares that there is no conflict of interest.

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