



Ethnoveterinary study of medicinal plants in Mehrabad village, Shahrbabak city, Kerman Province, Iran

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ABSTRACT

Background & Aim: The Mehrabad village people in Shahrbabak and Province Kerman, Southeast Iran, have used medicinal plants and traditional remedies for ethnoveterinary practices, such as treating domestic animals during livestock breeding, since ancient times.

Experimental: This study aimed to identify the plants used in their conventional ethnoveterinary methods and to propose suggestions for future conservation and sustainable use of this knowledge between 2019 and 2020. Data were collected from the local Buyi people through semi-structured interviews.

Results: A total of 36 plant species, belonging to 25 families, used in ethnoveterinary practices by the Mehrabad people. During the survey, it was observed that the most prevalent families concerning the number of species were Apiaceae (13.51%), Followed by Papilionaceae (10.81%) followed by Chenopodiaceae, Lamiaceae, Liliaceae, Rosaceae, and Solanaceae (5.40% each), and the remaining families (2.70%) species. Sources and habits of medicinal plant types of growth that were herbs (60.97%), shrubs (24.39%), and trees (14.63%). Leaves (23.80%) were the most widely used plant parts for ethnoveterinary medicine, followed by Seeds (19.05), Aerial parts (19.05), and Fruits (16.66). Oral administration was the most common (70.45. %), followed by cutaneous (topical) administration (13.63%), chewing (9.09%), and smoking (6.81%). Older farmers had more excellent EVM knowledge than those who were younger.

Recommended applications/industries: The information obtained in this study may help in the use and discovery of new drugs and further studies are needed to prevent the extinction of traditional veterinary knowledge (ethnoveterinary). Oral administration was the most common (42.76%), followed by cutaneous (topical) administration (36.18%).

1. Introduction

Indigenous Technical Knowledge (ITK), over time mainly in society through the experiences and an understanding of the environment in a particular culture, developed. Understanding indigenous knowledge in agriculture helps to ensure that incorrect

agricultural practices lead to erosion and degradation of the environment (Yadav *et al.*, 2014). In fact, this knowledge is essential for sustainable food security, the protection of the diversity of plant and animal species, and the vital properties of the soil, such as physical,

biological, and chemical properties (Eswaran *et al.*, 2013).

Traditional veterinary is one of the legitimate and scientific traditional methods that has been used among different ethnic since ancient times (Selvaraju *et al.*, 2011; Benítez *et al.*, 2012). Today, the science of the use of medicinal plants, And the application of traditional methods for the health and treatment of sick livestock are generally called traditional veterinary or Ethnoveterinary (Xiong *et al.*, 2020).

Traditional veterinary knowledge is the native knowledge of traditional animal husbandry in different regions and this knowledge and expertise are unique to animal diseases that use natural substances, medicinal plants and living organisms. It can be claimed that a large part of traditional medicine originated from observations and experiments on medicinal plants, and in this regard, the behavior of animals and their instinctive use in the treatment of diseases has been taken into consideration (Xiong and Long 2020; Stucki *et al.*, 2019).

On the one hand, the lack of veterinarians, low and indirect supply of veterinary drugs, high costs of equipment and drugs, and side effects of chemical drugs, on the other hand, threaten the extinction of local indigenous knowledge (Stucki *et al.*, 2019; Shen *et al.*, 2010).

Native herders who are deployed in many countries use their indigenous knowledge. This knowledge has been gained through cultural communication, experiments, and experimental observations over the years, and if written, can be used as a way to transfer the use of medicinal herbs. In a veterinarian that has been tried and used by local people for generations (Bakare *et al.*, 2020). In developing countries, animal husbandry and the presence of animals play a very important role in the lives of farmers in rural communities and represent a great asset for farmers owning small lands. These farmers are located in remote areas for transport, meat, milk, and Skin production are economically dependent on their livestock. In these areas, naturally, livestock is also affected by various factors, and livestock farmers treat traditional herbal medicines their livestock (Usmane *et al.*, 2016; Tariq *et al.*, 2014). Traditional medicines for treating sheep and goats have been used in these cultures for a long time. The community only consumes a variety of herbal medicine that may be easily found in the area where they live. Until now,

only a few people in the community had access to this knowledge. This research aims to provide recommendations for the conservation of local medicinal plants widely used, resulting in increased access to nature and providing a scientific foundation for the perpetuation of research on local medicinal plants in the District of Shahrbabak, Mehrabad village, Iran.

2. Materials and Methods

2.1. Study Areas

A survey of ethnoveterinary medicinal plants in Mehrabad village, Shahrbabak district, Kerman was carried out between October 2019 to October 2020. Shahrbabak district is bounded on the north by Mehriz district, on the east by Rafsanjan district, on the south by Sirjan district, and on the west by Khatam district. Shahrbabak has located 240 km from Kerman. Mehrabad village is located 15 km southwest of Shahrbabak based on the latest statistics obtained from the Health Care Home of Mehrabad, 124 focal and extended families (a population of 488 people) lived in the village in 2010. In total, the region's income-generating activities include crop activities, livestock breeding, and to a much lesser extent handicraft activities.

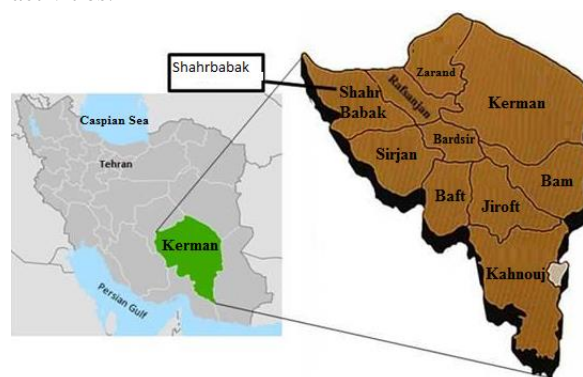


Figure 1. Location map of study area in Mehrabad village, Shahrbabak city, Kerman province, Iran.

2.2. Investigating methods

An ethnoveterinary botanical survey was conducted to congregate information on the traditional uses of plants in animals such as goats and sheep and the human health care system using semi-structured interviews and observation with the traditional healers who were willing to share their indigenous knowledge.

Many extensive trips were undertaken between 2019 and 2020 in different seasons for the collection of plants and associated ethnomedicinal information from the Shahrbabak villages.

2.3. Data collection

Specimens of plants that were used by traditional healers for the treatment of livestock and human ailments were collected. The collected data were based on the information supplied by the healers during the interview. The specimens of plants were collected using standard botanic methods for identification. During the collection of information, habitat data, a general description of the plant, and the geographical site of the collection were recorded. The collected information included the local name of the traditional medicinal plant, diseases treated, parts used, condition of the plant used, method of preparation, and route of administration. The collected samples of medicinal plants were coded, pressed, and dried, collected samples of medicinal plants were coded, pressed, and dried, then taken to, the Faculty of Pharmacy Kerman University of Medical Sciences Herbarium (Tekle and Research 2014; Tadesse *et al.*, 2014).

2.4. Data organization

Data collected from informants was organized using Microsoft Excel 2016 and Microsoft Word 2016. Plant habit was categorized into three classes, that is, herb, shrub, and tree. Plant parts were classified into leaves, stem bark, root, stem, whole plant, seeds, aerial parts, and fruit. The route of administration was divided into 4 categories which were oral, chewable, topical, and smoked. The uses of medicinal plants were categorized into different groups which included the treatment of wound, rumen impaction, coughing, bloating, appetizing, internal parasite, diarrhea, digestive problems, gastric problem, bone fracture, fever, cold, pain, mastitis, off feeding, urinary inflammation, general tonic, external parasite, blood purifier, laxative, antiseptic, enhancement of lactation and retained placenta.

2.5. Data analysis

Data obtained from responses were cleaned and coded in Microsoft Excel Worksheet ver. 2016. Thereafter, descriptive statistics in the form of graphs and tables were drawn from the data.

3. Results and discussion

3.1. Demographic characteristics of participants

The results of this study showed that Male respondents were higher (72.73%) than females (27.27%). The reason for this may be due to the greater number of male herders than women. Similar findings were reported in different parts of Iran and the world (Naghdi, 2018; Eshetu *et al.*, 2015; Assefa and Bahiru, 2018). This study also showed that the average number of informants in older groups is higher than in younger groups. The main reason for this significant difference is the spread of modern medicines and the lack of interest of young people in traditional medicines. In addition, the non-availability of medicinal plants in all seasons and the laborious nature of harvesting make the young people not interested (Eiki *et al.*, 2021). Correspondingly, less educated respondents reported a higher number of medicinal plants than educated respondents (Eshetu *et al.*, 2015; Shen *et al.*, 2010). This is due to the fact that educated respondents did not give attention to traditional medicine and prefer modern medicine. This in turn causes the degradation of ethnoveterinary knowledge in the coming generation. The same finding was reported by Tesfaye and GeletaErena (2020).

3.2. Diversity of medicinal plant species used in the study area

A total of 37 ethnoveterinary medicinal plant species belonging to various 25 families were documented with details on their importance, scientific name and code, family name, local name, parts used, habit, preparation, used, and mode of application (Table1).

Table1. Plants used for ethnoveterinary purposes the in Mehrabad village, Shahrbabak city, Kerman province, Iran.

No	Scientific name and Code	Family name	Local name	Parts used	Source	Habit	Preparation	Uses	Mode of application
1	<i>Achillea wilhelmsii</i> C.Koch.(KF1155)	Apiaceae	Boomaderan	Aerial part	Wild	Herb	The aerial part was mixed with water and the sediment is applied topically	Wound	Topical
2	<i>Alhagi persarum</i> Adans.(KF 1621)	Papilionaceae	Kharshotor	Aerial part	Wild	Herb	Aerial parts are boiled in water and given orally	Rumen impaction	Oral
3	<i>Allium cepa</i> L.(KF1670)	Liliaceae	Piyaz	Bulb	Cultiva	Herb	Crushed Bulb mixed with water given orally	Coughing	Oral
							Bulbs are chewed	Bloating , Appetizing	Chew
4	<i>Allium sativum</i> L.(KF1669)	Liliaceae	Sir	Bulb	Cultiva	Herb	Bulbs are chewed	Internal parasite	Oral
5	<i>Amygdalus communis</i> L.	Rosaceae	Badam e shirin	Seeds	Cultiva	Tree	Seed oil is orally administered	Rumen impaction	Oral
6	<i>Anethum graveolens</i> L.(KF1137)	Apiaceae	Shavid	Fruits	Cultiva	Herb	Fruits are boiled in water then the filtered juice is given orally	Diarrhea	Oral
7	<i>Artemisia sieberi</i> Besser. (KF1102)	Compositae	Jaz,Dermaneh	Aerial part	Wild	Herb	Aerial parts are boiled in water then the filtered juice is given orally	Internal parasite Digestive problems	Oral
8	<i>Cannabis sativa</i> L.(KF1369)	Cannabinaceae	Shahdane	leaves	Cultiva	Shrub	Fresh leaves are crushed and applied topically	External parasite	Topical
9	<i>Cassia fistula</i> L.	Caesalpinaceae	Sena make	Leaves	Cultiva	Shrub	Leaves are boiled in water and given to orally	Rumen impaction	Oral
10	<i>Chenopodium album</i> L.(KF1335)	Chenopodiaceae	Salme	Whole plants	Wild	Herb	The whole parts are chewed	Internal parasite, blood purifier	Chew
							The whole parts are boiled in water then the filtered juice given to orally	Laxative	Oral
11	<i>Cuminum cyminum</i> L. (KF1357)	Apiaceae	Ziresabz	Fruits	Cultiva	Herb	Decoction of the whole plant is given orally	Gastric problem	Oral
12	<i>Discurainia Sophia</i> (L.) Schur (KF 1209)	Cruciferae	Khakshir	Seeds		Herb	Seeds are boiled in water and given orally	External parasite	Oral
13	<i>Elaeagnus angustifolia</i> L(KF 1317)	Elaeagnaceae	Senjed	Fruits	Cultiva	Tree	Fruits are powdered and given orally	Diarrhea	Oral
				Stem bark		Tree	The broken organ will be closed by the stem bark	Bone fracture	Topical
14	<i>Eucalyptus camaldulensis</i> Var.	Myrtaceae	Ocalyptus	Leaves	Cultiva	Tree	Fresh leaves were crushed and mixed with water and the extract was given orally	Antiseptic	Oral
15	<i>Foeniculum vulgare</i> Miller. (KF1466)	Apiaceae	Badian	Fruits	Cultiva	Herb	Seeds (Fruit) are crushed and powder is given	Digestive problems, diarrhea	Oral

				Aerial parts			orally Aerial parts are boiled in water and are fed to the animal		
16	<i>Glycyrrhiza glabra</i> L.(KF1273)	Papilionaceae	Maki	Roots		Herb	Roots are boiled in water and given to orally	Diarrhea	Oral
17	<i>Juglans regia</i> L.(KF1656)	Juglandaceae	Gerdoos	Leaves	Cultiva	Tree	Leaves are boiled in water then the filtered juice given to orally	External Parasite	Oral
18	<i>Malva sylvestris</i> L.(KF1301)	Malvaceae	Khatmi	Aerial parts	Wild	Herb	Dried aerial parts are mixed with water given to orally	Fever, Coughing, cold	Oral
19	<i>Medicago sativa</i> L.(KF 1272)	Papilionaceae	Yonje	Aerial part	Cultiva	Herb	Fresh aerial part is fed to an animal	General tonic, enhancement of lactation	Chew
20	<i>Mentha longifolia</i> (L.) Huds (KF1353)	Lamiaceae	Poodene	Leaves	Wild	Herb	Fresh or dried leave infusion is given orally	Digestive problems	Chew
21	<i>Nicotiana tabacum</i> L.	Solanaceae	Tanbacco	Leaves	Cultiva	Herb	Dried leaves mixed with water and taken orally after filtering	Internal parasite	Oral
							Dried leaves mixed with water and is poured on the back of Gusev	External parasite	Topical
22	<i>Olea europaea</i> L.(KF1434)	Oleaceae	Zytoon	Fruits	Cultiva	Shrub	Fruits oil is orally administered	Rumen impaction	Oral
23	<i>Papaver somniferum</i> L.(KF1260)	Papaveraeae	Taryak	Fruits	Cultiva	Herb	Opium mixed with little water and applied topically	Mastitis	Topical
24	<i>Peganum harmala</i> L.(KF 1296)	Zygophyllaceae	Esfand	Seeds	Wild	Herb	Dried seeds are heated directly to smoke	Mastitis, external parasite, wound , pain	Smoke
25	<i>Pistacia atlantica</i> L.(KF1136)	Anacardiaceae	Bane	Leaves	Wild	Tree	Dried leaves smoked(smoke bath)	Coughing	Smoke
26	<i>Prangoscheilanthifolia</i> Boiss.(KF 1181)	Apiaceae	Jashir	Aerial part	Wild	Herb	Aerial parts are boiled in water and is applied on the skin	External parasite	Topical
27	<i>Ricinus communis</i> L.(KF 1398)	Euphorbiaceae	Karchak	Seeds	Cultiva	Shrub	Seed oil is orally administered	Rumen impaction , digestive problems	Oral
				Roots		Shrub	Root paste is given orally	Retained placenta	Oral
28	<i>Rosa damascene</i> Mill.(KF 1362)	Rosaceae	Gholemohamadi	Flowers	Cultiva	Shrub	Flowers are boiled in water and given orally	Rumen impaction	Oral
29	<i>Solanum nigrum</i> (KF1305)	Solanaceae	Roopas	Seeds	wild	Herb	Dried seeds are boiled in water and given orally	Fever, coughing, cold	Oral
30	<i>Spinacia oleraceae</i> L.	Chenopodiaceae	Sfenaj	Leaves	Cultiva	Herb	Juice of leaves is given orally	Antiseptic	Oral
			Sfenaj	Leaves		Herb	Fresh leaves	Internal	Oral

31	<i>Tamarix aralensis</i> Bge.(KF1365)	Tamaricaceae	Gaz	Stem	Wild	Shrub	crushed and squeezed and the juice is extracted Dried twigs smoke and smoke of the branches is used	parasite Retained placenta	Smoke
32	<i>Teucrium polium</i> L.(KF1249)	Lamiaceae	Kalpoure	Aerial part	Wild	Herb	The dried aerial part was mixed with water and given orally after filtration	Digestive problems, diarrhea	Oral
	<i>Thea sinensis</i>	Theaceae	Chay	Leaves	Cultiva	Shrub	The dried leaves are boiled in water then the filtered juice given orally	Off feeding	Oral
33	<i>Triticum aestivum</i> L.(KF1677)	Geramineae	Gandom	Seeds	Cultiva	Herb	The seeds are roasted and is given orally	Enhancement of lactation	Oral
34	<i>Trigonella foenum-graecum</i> L.(KF1523)	Papilionaceae	Shanbalile	Seeds	Cultiva	Herb	Seeds are boiled in water and is given orally	Diarrhea, mastitis	Oral
35	<i>Vitis vinifera</i> L. (KF 1381)	Vitaceae	Angor	Fruits	Cultiva	Shrub	Juice of fruits boiled then orally drenching	Bloating, rumen impaction	Oral
			Angor	Seeds		Shrub	Crushed seeds are taken orally	Diarrhea	Oral
36	<i>Zea mays</i> L.(KF1370)	Poaceae	Zorat	Flowers	Cultiva	Herb	Female inflorescence is boiled in water and given orally	Urinary inflammation	Oral

Apiaceae was represented by five (13.51%) species, followed by Papilionaceae was represented by four (10.81%) species, Chenopodiaceae, Lamiaceae, Liliaceae, Rosaceae and Solanaceae with two (5.40%) species each; and the rest eighteen families constituted only one (2.70%) species each (Figure 2).

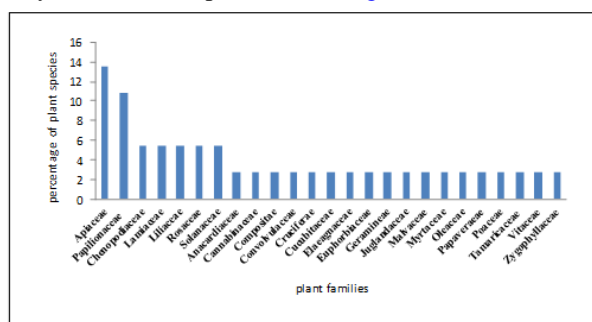


Figure 2. The most frequently used and reported plant families for ethnoveterinary practices in Mehrabad village, Shahrabak, Kerman, Iran.

Also, *Peganum kamala* (12.5%), *Vitis vinifera* (9.37%), *Allium cepa* (9.37%), *Ricinus communis* (9.37%), *Malva sylvestris* (9.37%), *Elaeagnus angustifolia* (6.25%), *Foeniculum vulgare* (6.25%), *Chenopodium album* (6.25%), *Spinacia oleraceae* (6.25%), *Artemisia sieberi* (6.25% species), *Teucrium polium* (6.25%), *Trigonella foenum-graecum* and

Medicago sativa (2.77%) are major plant species (Figure 3).

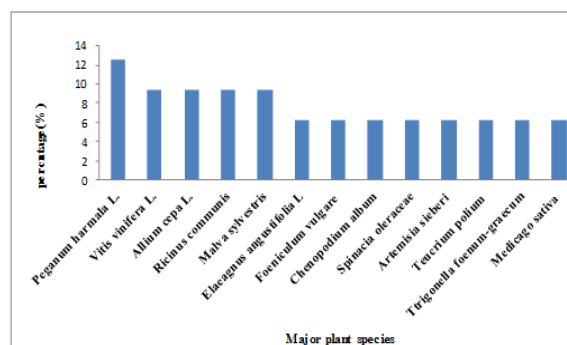


Figure 3. The most frequently used and reported plant Species for ethnoveterinary practices in Mehrabad village, Shahrabak, Kerman, Iran.

Previously, researchers reported 19 plant species in North Khorasan (Abbasnia et al., 2018). Bahmani and Eftekhari (2012) found that in total, 22 plants were used in the treatment of dog disorders in the southern regions of Ilam province (Bahmani and Eftekhari, 2013).

3.3. Sources and habits of medicinal plants

In the present survey, 60.97% of the reported species are herbs. Other highly reported species are the tree

(14.63%) and the shrub (24.39%) (Figure 4). The common use of herbaceous plants was also reported in other parts of the world (Eshetu et al., 2015; Abbasnia et al., 2018; Bahmani and Eftekhari, 2013). Local people used herbs and trees most commonly as medicine due to their availability in the surrounding area.

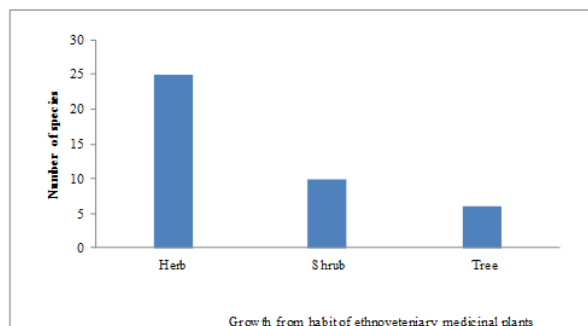


Figure 4. Habits/growth form of ethnoveterinary medicinal plants in Mehrabad village, Shahrabak, Kerman, Iran.

3.4. Plant parts used to prepare remedies

The plant parts that are used to prepare medicine are leaves (23.25%), seeds (18.6%), aerial parts (18.6%), fruits (16.27%), flowers (4.65%), Bulb (4.65%) roots (4.76%), whole plants (2.32%), bark (2.32%), stem bark (2.32%) and stem (2.32%) (Figure 5). In this research, the most used plant components to prepare herbal medicines were leaves. This result is consistent with the results of other researchers who stated that most plants' bioactive compounds are produced in the leaves (Badar et al., 2017; Murad, Tariq, and Ahmad 2014; Berhanu et al., 2020). Also, similar to the other studies, in Bojonegoro District in Indonesia, plant part frequency of leaves (58.00%) was a common component of herbal medicine (Ahmed and Murtaza 2015).

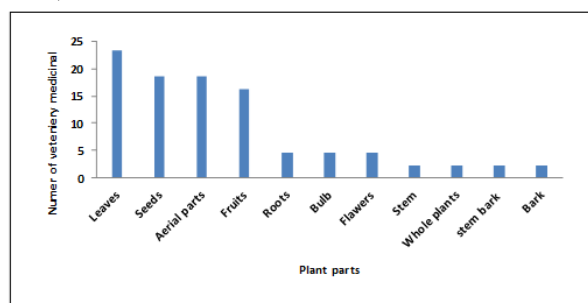


Figure 5. Plant parts used for the preparation of medicinal remedies in Mehrabad village, Shahrabak, Kerman, Iran.

3.5. Routes of administration

The common mode of application/administration is an oral application (31 spp., 70.45%). The majority of remedies were administered orally in the study area for the treatment of different ailments and then topical (6 spp. 13.63%), chew (4 spp. 9.09%) and smoke (3 spp. 6.81%) application (Figure 6). Similar results were also documented in previously reported literature (Naghdi 2018; Ahmed and Murtaza 2015; Ahmad, Ahmad, and Weckerle 2015; Piluzza et al., 2015). Tekle (2015) stated that most ethnoveterinary practitioners in Zambia prefer administering medicines orally because oral routes allow rapid physiological reactions thereby increasing the curative power of the medicines .

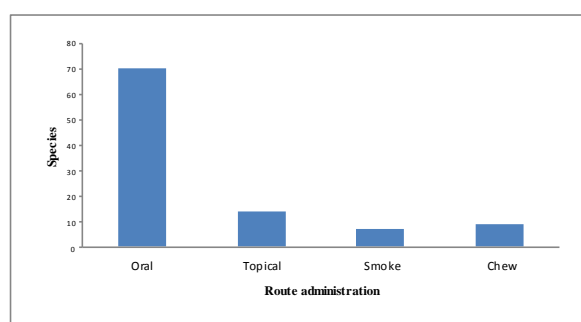


Figure 6. The proportion of administration route of medicinal plants preparation treatment of different livestock and human diseases in Mehrabad village, Shahrabak, Kerman, Iran.

3.6. Types of livestock diseases and traditionally used medicinal plant species

In this study, 20 types of livestock ailments were identified including wound, rumen impaction, coughing, bloating, anorexia, internal parasite, diarrhea, digestive problems, external parasite, blood concentration, constipation, gastric problem, bone fracture, infection, fever, coughing, cold, general weakness, and lack of milk. Of those ailments, rumen impaction and diarrhea were the most common type of ailments and were treated by 7 medicinal plant species (Table 2). This is due to the high prevalence of this disease in the region. Rumen impaction was mostly treated by *Alhagi persarum*, *Amygdalus communis*, *Cassia fistula*, *Olea europaea*, *Ricinus communis*, *Rosa damascena* and *Vitis vinifera* (Fruits extract). Diarrhea was mostly treated by *Anethum graveolens*, *Laeagnus*

angustifolia, *Foeniculum vulgare*, *Glycyrrhiza glabra*, *Teucrium polium*, *Vitis vinifera* (seed) and *Tritonell afoenum-graecum*.

Table 2. The number of ethnoveterinary medicinal plant remedies used to treat ailments/conditions in the study area.

No	Diseases treated	Number of ethnoveterinary medicinal plant used
1	Blood purifier	1
2	Bone fracture	1
3	Gstic problem	1
4	General tonic	1
5	Laxative	1
6	Pain	1
7	Urinary inflammation	1
8	Antiseptic	2
9	Bloating	2
10	Cold	2
11	Enhancement of lactation	2
12	Fever	2
13	Retained placenta	2
14	Mastitis	3
15	Coughing	4
16	Digestive problems	5
17	External Parasite	5
18	Internal Parasite	5
19	Diarrhea	7
20	Rumen impaction	7

The same herbal medicine for the same disease can be used in different ways, for example, in this study, smoke from dried leaves of *Pistacia atlantica* is used to treat cough (smoke bath), but another study showed that eating *P. atlantica* leaves to treat and It is used to reduce cough in dogs (Bahmani and Eftekhari, 2013). *P. atlantica* leaves contain secondary metabolites, especially flavonoids and tannins (Ben Ahmed et al., 2017). A medicinal plant can have different uses, our study has shown that the fruits of the *Foeniculum vulgare* plant extract are used to treat stomach problems and diarrhea, but it was reported by Yapple et al. (2017) that this plant, is used to treat behavioral problems, aggression and parasitic diseases in addition to treating digestive problems. Also, *Chenopodium album* is used to eliminate internal parasites as blood purifier and laxative. Similar results have been reported by Siliguri in India (Mondal, 2012). Researchers have reported that *C. album* is used to heal wounds and bloating in Pakistan (Aziz et al., 2018). A study by Tekle (2014) in Ethiopia showed that *C. album* L. is used to treat abdominal pain, abdominal swelling and internal parasites (Tekle and Research, 2014). *Ricinus communis* seed oil is a laxative. It has similar uses in traditional veterinary medicine. In Mehrabad village *R. communis* oil is used to treat digestive problems and

rumen impaction of their livestock. Also, in the Hassan District of Karnataka, India, *R. communis* seeds oil is orally administered for constipation (Kumar et al., 2017). *R. communis* powder of the seed is used for sterility in horses and donkeys in the district of Karak, Pakistan (Khattak et al., 2015). In southern Ethiopia, fresh leaves of castor are mixed with water and used orally to treat mastitis and poor mothering (Eshetu et al., 2015). *Triticum aestivum* seed is primarily used as a concentrated source of nutrients. It contains an ample load of vitamin A, vitamin C, vitamin E, iron, calcium, magnesium, and amino acids (Plaza et al., 2003). In district Bhiwani (Haryana), India, these seeds are crushed and mixed with tea leaves and Ashwagandha, then the mixture is given to camel to treat cold (Yadav et al., 2014). *T. aestivum* L. seeds are roasted and used to increase lactation among the people of the Mehrabad Shahrababak region. In our study, *Juglans regia* L. Leaves are boiled in water and filtered, then used orally for the treatment of external parasites. Another study in Pakistan has previously reported that fresh leaves of *J. regia*. are eaten by the animal for relieving gastric problems and for the retention of the placenta (Aziz et al., 2018).

Mentha longifolia is a plant with many properties. Various pharmacological activities have been confirmed for *M. longifolia*, such as anti-parasitic, antimicrobial, anti-insect, antimutagenic, anti-nociceptive, anti-inflammatory, antioxidant, kerato protective, hepatoprotective, anti-diarrhea, and spasmolytic effects (Farzaei et al., 2017; Karimian, Kavooosi, and Amirghofran, 2013; Asghari et al., 2018; Adham, 2015). Phytochemical compounds of *M. longifolia* are flavonoid, alkaloid, cardiac glycoside, terpenes (Ahmed and Murtaza, 2015). In Mehrabad village Shahrababak, fresh or dried leaves of *M. longifolia* are given orally for digestive problems. Under similar circumstances as in of Thakht-e-Sulaiman hills, West Pakistan, fresh or dried leaf infusion is given for abdominal pain and body coolness (Badar et al., 2017).

In our study, *Allium cepa* crushed bulb was mixed with water and given orally for coughing. Bulbs are chewed for bloating. In a region of India (Hassan karnataka), it was reported that grind *A. cepa* bulb mixed with black salt to prepare drink with water is useful to cure infection of the mouth and hoops (Kumar et al., 2017). In South Waziristan Agency and Bajaur Agency, Pakistan, *A. cepa* bulbs are given orally to cows, sheep and goats to treat digestive problems (Aziz

et al., 2018). Researchers of Ethnoveterinary health in South Asia use the root of *A. cepa* to treat infertility and bronchitis (Suroowan *et al.*, 2017b). It has been investigated that the biological activities of onions are mainly due to the volatile compounds of sulfur in it (Hiremath). Also, *Allium sativum* is another species of this genus. In this study, the bulb of *A. sativum* was given orally to treat the parasite although in another study it was used to treat internal parasites and skin diseases (Manoranjotham *et al.*, 2016). Suroowan *et al.* (2017a) used garlic orally to treat mastitis and cough and in other reports *A. sativum* was used for witching, shivering, breathlessness, parasites, poison, heat, fever, colds, diarrhea, and blackleg (Shen *et al.*, 2010; Lulekal *et al.*, 2014). In another report root powder of *A. sativum* was orally given to animals, i.e, goats, the sheep, for infection treatment. The bulb is crushed and mixed in a way administered orally in order to rate fertility in domestic animals (Xiong, *et al.*, 2020). Dried aerial parts of *Malva sylvestris* are used to treat stomach fever, coughing and cold in sheep and goats in Mehrabad village, Shahrbabak. Other studies have shown Crushed leaves of this herb are given to cows to increase milk production (Gavale and Patil, 2020).

Opium is the Latex of the poppy (*Papaver somniferum*.) plant. Opium contains many alkaloids, including morphine, codeine, thebaine, papaverine, and noscapine (Dittbrenner *et al.*, 2012). Opium (*P. somniferum* Latex) is one of the most valuable drugs and Morphine and Codeine, the two principal alkaloids, are widely used in medicine. The most important application of papaver alkaloids is due to their analgesic properties (Mani and Dhawan, 2011). In this study, opium (*P. somniferum*. Latex) was mixed with little water and applied topically to treat mastitis. In Peshawar, Pakistan, the fruit of the poppy (*P. somniferum*) plant is used in the manufacture of a combination medicine to treat vaginal prolapse (Khan, *et al.*, 2015). Researchers have reported different uses for *P. harmala* in ethnoveterinary, for example, in South Waziristan and Bajaur Agency of Pakistan, the whole plant of *P. harmala* is used orally and topically for digestive problems, antiparasitic and skin diseases (Khattak *et al.*, 2015). In the hills of Takht Sulaiman located in the west of Pakistan, *P. harmala* is used to treat scabies, external parasites and to cool the body (Aziz *et al.*, 2018). In Thakht-e-Sulaiman hills, West Pakistan, *P. harmala*. Is used against ectoparasites and

for body cooling (Ahmad *et al.*, 2015). In North Khorasan province, the whole *P. harmala* plant is used to treat theileriosis and mastitis (Abbasnia *et al.*, 2018).

4. Conclusion

In this study, 36 species that belong to 25 families of ethnoveterinary medicinal plants were identified in the study area. The result of this study is in agreement with the all above citations and documentation. The distribution of healers indicated that, of the 22 (six women and sixteen men) traditional livestock practitioners interviewed, the majority were in the range of 60-85 years of age. The majority of informants accounting for 70.7% were males, and the remaining 27.3% were females. It is observed that the knowledge regarding ethnoveterinary medicine is still surviving among the elderly members of the rural communities in the district. However, recent medical healthcare especially, the veterinary section in developing areas is reducing the use of medicinal plants for the treatment of livestock, and therefore, the practice of traditional knowledge for curing animal ailments is diminishing. Also, this knowledge is not limited to medicinal plants and it also includes many minerals and animal products such as white alum, animal oil, turtle eggs, etc. There is room for research in this area.

5. References

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