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USE OF MEDICINAL PLANTS FOR THE TREATMENT OF DIFFERENT SHEEP AND GOAT DISEASES IN THARPARKAR, SINDH, PAKISTAN

A. H. Mirani¹, K. B. Mirbahar¹, A. L. Bhutto¹ and T. A. Qureshi¹

¹Faculty of Animal Husbandry and Veterinary Sciences,
Sindh Agriculture University, Tandojam, Pakistan

ABSTRACT

The current study was carried out to record the traditional use of medicinal plants being used for the treatment of different sheep and goat diseases in Tharparkar, Sindh, Pakistan. Using semi-structured open-ended questionnaire information was collected by interviewing respondents during May 2012 to April 2013. A total of 22 plant species of veterinary importance belonging to 17 botanical families were documented against 10 common diseases of sheep and goats. *Brassica campestris* was reported as the most frequently used plant, followed by *Azadirachta indica* and *Plantago lanceolata*. Brassicaceae followed by Apiaceae, Solanaceae and Amaryllidaceae were reported as the frequently used plant families. Ethnoveterinary knowledge is declining because of the rapid socio-economic changes and lack of interest of young people. It is a part of cultural heritage can be saved and propagated for future generation. The information is expected to be of value for veterinary practitioners as well as the herbal drug industry.

Keywords: Ethnoveterinary, medicinal plants, sheep and goats, Tharparkar.

INTRODUCTION

Plants have been used since ancient times to cure diseases of human and animals (Rajpar *et al.*, 2011). In African countries 95% of traditional medical preparations are of plant origin (Hoareau and DeSilva, 1999; Giday *et al.*, 2003; Ole-Miaron, 2003). According to the WHO more than 80% of world population in developing countries depends on medicines from plants (Shah *et al.*, 2009). There are some 35000 plant species which are known to have medicinal value (Cotton, 1996). Medicinal plants are easily available, cheaper, have less side effects and some-times are the only source of health care for the poor (Acharya *et al.*, 2009). All parts of the plants including leaves, bark, fruits, flowers and seeds are used in medicinal preparations (McCorkle, 1986). Shinwari (2010) described that 121 plant compounds are being used in the preparation of allopathic drugs. Some of the well-known drugs developed from plants are

Corresponding author: miramjadsau@gmail.com

Tubocurarine developed from *Talabash curare*, Strophantin from *Strophantus gratus*, Atropine from *Atropa belladonna*, Digoxin from *Digitalis lanata* (Anzuino, 1999; Lans, 2001). Livestock is the main source of economy of the people of Tharparkar. Managing the animals health and productivity, livestock raisers mostly depend on traditional methods. The majority of them are poor and do not have access to veterinarians and allopathic drugs. Therefore, an attempt has been made to collect information on the ethnoveterinary use of medicinal plants by the sheep and goat farmers for the treatment of different diseases in Tharparkar, Sindh, Pakistan.

MATERIALS AND METHODS

Study area

The present study was carried out in the Tharparkar district of Sindh province. The district is administratively subdivided into four talukas, i.e. Chachro, Diplo, Mithi and Nangarparkar, with a total area of 19638 Km² (Anonymous, 2012). The population of Tharparkar is about 914,300 souls (Population Census Organization, 1998). Tharparkar is mostly deserted and consists of a barren tract of sand dunes. The socio-economic condition of this district solely depends on seasonal rain. About 91% of the total population depends on livestock, with the remaining on cultivation and small business (Anonymous, 2012).

Ethnoveterinary survey

An initial reconnaissance survey was conducted from May 2012 to April 2013. Information was collected from sheep and goat farmers about common diseases and their treatment with medicinal plants. Local name of plants, plant parts, methods of drug preparation and route of administration were also recorded. Semi-structured open-ended interviews, observations, focus group discussions and field visits were used as the tools of participatory rural appraisal (PRA) (Waters-Bayer and Bayer, 1994; Catley, 1999). A total of 283 sheep and goat farmers were interviewed. All plants reported and used by the respondents were procured from farmers or purchased from local markets. Collected plants were identified to the species level using literature and experts from the relevant departments of Faculty of Crop Production, Sindh Agriculture University Tandojam.

RESULTS AND DISCUSSION

Limited studies have been conducted in Pakistan on documenting traditional use of medicinal plants against various livestock diseases. The people of Tharparkar have a rich heritage of indigenous knowledge. The local population often relies on traditional methods to manage health problems of animals due to their poor economic status and the lack of veterinary facilities in the area. During the present study a total of 22 plant species of veterinary importance representing 17 botanical families were recorded (Table 1). The reported plants were used for the

treatment of 10 frequently encountered diseases of sheep and goats. Results showed that the *Brassica campestris* L. was most frequently used plant, followed by *Azadirachta indica* A. Juss. and *Plantago lanceolata* L. Brassicaceae followed by Apiaceae, Solanaceae and Amaryllidaceae were frequently used botanical families.

The usage of *Brassica campestris* L. against bloat/ tympany, foot and mouth disease and myiasis is consistent with several other workers (Muhammad *et al.*, 2005; Dilshad *et al.*, 2008; Farooq *et al.*, 2008; Sindhu *et al.*, 2010; Sharma *et al.*, 2012; Sehgal and Sood, 2013). Its antiviral, antibacterial and anticancer properties have also been reported in the literature (Le *et al.*, 2003; Omar *et al.*, 2009; Jain *et al.*, 2011). The second most frequently used plant for the treatment of ectoparasites and endoparasites in the study area was *Azadirachta indica* A. Juss.

The results of this study are in line with the earlier findings of Jabbar *et al.* (2006); Dilshad *et al.* (2008); Sindhu *et al.* (2010); Singh *et al.* (2011); Sharma *et al.* (2012). In the case of diarrhea/dysentery we found *Plantago lanceolata* L. as the frequently used plant. Duke (1992) reported that the leaves of plantain contain mucilage, which helps in regulating the gastrointestinal motility. *Phoenix dactylifera* L. was the frequently used plant for the treatment of infertility. Dilshad *et al.* (2008) documented its use in delayed puberty and silent estrous. In the current study *Citrus limon* (L.) Burm. f. was used by the sheep and goat owners for the treatment of mastitis. Antioxidants, antimutagenic, analgesic and anti-inflammatory properties of lemon have been reported by Ortuno *et al.* (2006). The results of present study are in close agreement with the earlier findings of Bilal *et al.* (2009). *Cuminum cyminum* L. was the widely used plant against milk yield problems (as galactagogue). This plant has been reported to be used as abortive, as a galactagogue, antiseptic and antihypertensive (McGuffin *et al.*, 1997; Leporatti and Ghediva, 2009). In the present study *Allium sativum* L. seems to be the most frequently used plant for the treatment of retention of placenta in sheep and goats. Garlic contains the sulfur bearing compound ajoene, which has antifungal, antiparasitic and antibacterial properties (Rahman *et al.*, 2006).

Various traditional methods of drug preparation were also recorded during the study. The frequently used methods were pulverization followed by decoctions. Remedies were administered either *per os* or applied topically. However, vegetable oil, water, jaggery, yogurt and milk whey were recorded as vehicles. Seeds, leaves, fruits, roots, rhizomes, bulbs, barks, latex, husk and branches were commonly used plant parts. The findings of our study are in close agreement with the results of Yineger *et al.* (2007); Dilshad *et al.* (2008); Farooq *et al.* (2008); Khan (2009); Sindhu *et al.* (2010); Thomas *et al.* (2011); Sharma *et al.* (2012).

Table 1. List of medicinal plants used by the sheep and goat farmers for the treatment of different diseases/ conditions (n=283).

Disease	Plant species	Plant family	Local name	Plant part used	Preparation and administration	No. of informants reporting usage	%
Bloat/ Tympany	<i>Brassica campestris</i> L.	Brassicaceae	Sarinh	Seed	Seed oil drenched	73	25.8
	<i>Camellia sinensis</i> (L.) O. Kuntze.	Theaceae	Chanh	Leaves	Tea leaves boiled in water and drenched	33	11.66
	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Wadif	Seed	Ground seeds boiled in water and administered <i>per os</i>	24	8.48
	<i>Citrullus colocynthis</i> (L.) Schrader	Cucurbitaceae	Trooh	Fruit	Fruit pulverized, mixed with jaggery and given <i>per os</i>	21	7.42
	<i>Trachyspermum ammi</i> (L.) Sprague	Apiaceae	Jarue	Seed	Ground seeds mixed with common salt, boiled in water and administered <i>per os</i>	13	4.59
	<i>Mentha spicata</i> L.	Lamiaceae	Fodino	Leaves	Leaves boiled in water and drenched	12	4.24
Diarrhea/ Dysentery	<i>Plantago lanceolata</i> L.	Plantaginaceae	Ispangor	Husk	Husk mixed well with yogurt and administered <i>per os</i>	76	26.86
	<i>Musa paradisiaca</i> L.	Musaceae	Kello	Fruit	3-4 fruits fed to the animal for 3 days	21	7.42
	<i>Oryza sativa</i> L.	Poaceae	Chanwar	Seed	Boiled rice mixed well with yogurt and given <i>per os</i>	11	3.89
	<i>Prosopis cineraria</i> (L.) Druce	Fabaceae	Kandi	Leaves	Leaves boiled in water and drenched	9	3.18
Ecto-parasites	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Nim	Leaves	Leaves decoction applied topically	37	13.07
	<i>Brassica campestris</i> L.	Brassicaceae	Sarinh	Seed	Seed oil applied topically	21	7.42
	<i>Citrullus colocynthis</i> (L.) Schrader	Cucurbitaceae	Trooh	Fruit	Fruit decoction applied topically	17	6.01
	<i>Nicotiana tabacum</i> L.	Solanaceae	Tamak	Leaves	Leaves decoction applied topically	11	3.89
Endo-parasites	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Nim	Leaves	Leaves decoction drenched	47	16.61
	<i>Brassica campestris</i> L.	Brassicaceae	Sarinh	Seed	Seed oil mixed with <i>C. annum</i> L. fruit powder and given <i>per os</i>	21	7.42
	<i>Citrullus colocynthis</i> (L.) Schrader	Cucurbitaceae	Trooh	Fruit	Grated fruit boiled in water and given <i>per os</i>	18	6.36
	<i>Capsicum annum</i> L.	Solanaceae	Mirch	Fruit	Fruit powder mixed with water and given <i>per os</i>	12	4.24

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Foot and Mouth Disease	<i>Brassica campestris</i> L.	Brassicaceae	Sarinh	Seed	Seed oil is applied topically	31	10.95
	<i>Triticum aestivum</i> L.	Poaceae	Karik	Seed	Loaf (bread) made from seed flour and fed to the animal	16	5.65
	<i>Allium cepa</i> L.	Amaryllidaceae	Bassar	Bulb	Grated bulbs fed to the animal	8	2.83
Infertility	<i>Phoenix dactylifera</i> L.	Arecaceae	Khaji	Fruit	Dried dates given <i>per os</i>	29	10.25
	<i>Brassica campestris</i> L.	Brassicaceae	Sarinh	Seed	Seed oil drenched	16	5.65
	<i>Cocos nucifera</i> L.	Arecaceae	Donghi	Fruit	Grated dried fruit mixed with jaggery and given <i>per os</i>	12	4.24
Mastitis	<i>Citrus limon</i> (L.) Bum.f.	Rutaceae	Leemo	Fruit	Fresh juice mixed with sugar, water and administered <i>per os</i>	41	14.49
	<i>Capsicum annum</i> L.	Solanaceae	Mirch	Fruit	Dried fruit powder simmered in water and given <i>per os</i>	28	9.89
	<i>Calotropis procera</i> (L.) R. Br.	Asclepiadaceae	Aak	Latex	Latex mixed with <i>B. campestris</i> L. seed oil and applied topically	23	8.13
	<i>Allium cepa</i> L.	Amaryllidaceae	Bassar	Bulb	Grated bulbs mixed with <i>C. annum</i> L. powder and administered <i>per os</i>	21	7.42
	<i>Lawsonia inermis</i> L.	Lythraceae	Mehindi	Leaves	Mixture of <i>L. inermis</i> leaves, <i>T. amm</i> seeds, <i>A. cepa</i> bulbs and sugar candy administered <i>per os</i>	11	3.89
	<i>Trachyspermum ammi</i> (L.) Sprague	Apiaceae	Jarue	Seed	Ground seeds mixed with jaggery and given <i>per os</i>	8	2.83
Milk yield problems	<i>Cuminum cyminum</i> L.	Apiaceae	Jeero	Seed	Ground seeds boiled in milk and given <i>per os</i>	20	7.07
	<i>Trachyspermum ammi</i> (L.) Sprague	Apiaceae	Jarue	Seed	Ground seeds mixed with Jaggery and given <i>per os</i>	16	5.65
	<i>Cyamopsis tetragonoloba</i> (L.) Taub.	Fabaceae	Guar	Fruit	Chopped fruit fed to the animal	13	4.59
Myiasis	<i>Brassica campestris</i> L.	Brassicaceae	Sarinh	Seed	Seed oil applied topically	31	10.95
	<i>Nicotiana tabacum</i> L.	Solanaceae	Tamak	Leaves	Dried leaves powder poured into the wound	27	9.54
	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Nim	Leaves	Leaves paste mixed with <i>B. campestris</i> L. seed oil and applied topically	17	6.00
	<i>Calotropis procera</i> (L.) R. Br.	Asclepiadaceae	Aak	Latex	Latex applied topically	14	4.94

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Retention of placenta	<i>Allium sativum</i> L.	Amaryllidaceae	Thoom	Bulb	Bulb grated and mixed with jaggery, <i>T. ammi</i> L. seeds and given <i>per os</i>	33	11.66
	<i>Rosa damascene</i> Mill.	Rosaceae	Gulab	Flower	Rose petals mixed with milk and given <i>per os</i>	23	8.13
	<i>Calotropis procera</i> (L.) R. Br.	Asclepiadaceae	Aak	Latex	Latex mixed with water and given <i>per os</i>	22	7.77
	<i>Trachyspermum ammi</i> (L.) Sprague	Apiaceae	Jarue	Seed	Ground seeds mixed with jaggery, milk and given <i>per os</i>	21	7.42
	<i>Allium cepa</i> L.	Amaryllidaceae	Bassar	Bulb	Grated bulbs feed to the animal	11	3.89

CONCLUSION

It is concluded from the present study that livestock farmers of the study area are rich in traditional knowledge. Due to the inadequate veterinary facilities in Tharparkar, the local population often relies on its own traditional methods to keep the animals healthy and productive. Plants are the most commonly used ingredients in the preparation of traditional remedies due to their local availability and relatively low cost.

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