



**Full Length Article**

# Appraisal of Ethno-veterinary Practices Used for Different Ailments in Dairy Animals in Peri-urban Areas of Faisalabad (Pakistan)

FARRAH DEEBA<sup>1</sup>, GHULAM MUHAMMAD, ZAFAR IQBAL<sup>†</sup> AND IFTIKHAR HUSSAIN<sup>‡</sup>

Department of Clinical Medicine and Surgery, University of Agriculture, Faisalabad, Pakistan

<sup>†</sup>Department of Parasitology, University of Agriculture, Faisalabad, Pakistan

<sup>‡</sup>Department of Microbiology, University of Agriculture, Faisalabad, Pakistan

<sup>1</sup>Corresponding author e-mail [deebafarah@yahoo.com](mailto:deebafarah@yahoo.com)

## ABSTRACT

This study was conducted to document the ethno-veterinary practices (EVPs) used for treatment of different ailments in bovine and bubaline (dairy buffalo; *Bubalus bubalis*) livestock, over one year in peri-urban areas of Faisalabad. Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) techniques were used for selection of key-respondents (bovine & bubaline owners). Questionnaires with open-ended interviews were used to collect the information on EVPs used in bovine and bubaline for treatment of different ailments. There were a total of 58 EVPs, comprising of 41 based on plant usage, 11 combinations of plants and animal products/chemicals/organic matter and 6 based on animal products, chemicals or organic matter were documented for different ailments in dairy animals. Thirty-nine plant species representing 26 families were reported in the study area for treatment of different ailments in bovine and bubaline during past one year. Plants used in  $\geq 2$  conditions were *Capsicum frutescens* L., *Withania coagulans* (Stocks) Dund. (Solanaceae); *Eruca sativa* Mill., *Brassica campestris* L. var. *Sarson* Prain, *Lepidium sativum* L., (Brassicaceae); *Allium cepa* L., *Allium sativum* (Liliaceae); *Foeniculum vulgare* Mill., *Trachyspermum ammi* L. Sprague ex Turill. (Apiaceae); *Amomum subulatum* Roxb. *Zingiber officinale* Rosc. (Zingiberaceae); *Hordeum vulgare* L. (Poaceae) and *Piper nigrum* L. (Piperaceae). The Remedies were prepared by pulverization, soaking in water and decoctions and administered *per os* or applied topically included pepper-corns, bulbs, flowers, leaves, rhizomes, seeds and fruits. Which are the commonly used part of plants. The EVPs that claimed to be effective need to be validated using scientific procedures and their quality, safety and standardization of doses should be assured.

**Key Words:** Ethno-veterinary practices; Survey; Dairy animals; Faisalabad

## INTRODUCTION

Ethno-veterinary medicine (EVM) is based on folk beliefs, traditional knowledge, skills, methods and practices to cure diseases and maintain health of animals (Mathias-Mundy & McCorkle, 1989; Tabuti *et al.*, 2003). Traditional veterinary medical knowledge like all other traditional knowledge systems is handed down orally from generation to generation. EVP is disappearing because of rapid socioeconomic, environmental, technological changes and as a result of loss of cultural heritage losses under the guise of civilization (Mathias-Mundy & McCorkle, 1989; Nfi *et al.*, 2001). Affordability is one of the most important virtues of the ethno-veterinary system. Drawbacks to modern veterinary practice include questionable quality of allopathic drugs, development of chemo-resistance in livestock and user unfriendly effects such as high antibiotic and hormone residues in the milk and other animal products (Fielding, 1998; Monteiro *et al.*, 1998; Mathias-Mundy, 2004; [www.frlht.org](http://www.frlht.org)). EVP is used for the maintenance of good

animal health in developing countries (Kudi, 2003).

Pakistani farmers draw on over four millennia of knowledge and experience with EVPs however, very little has been done to scientifically document and improve upon these traditional practices. There has been some effort to record EVPs and validate medicinal plants in Pakistan (Akhtar *et al.*, 2000; Iqbal *et al.*, 2002, 2004; Muhammad *et al.*, 2005; Jabbar *et al.*, 2006a; Dilshad *et al.*, 2008; Farooq *et al.*, 2008) but this data set is meager compared to the vast knowledge that is in practice today. The present study was undertaken to collect information on EVPs being used by the dairy farmers in the peri-urban areas of Faisalabad over a one-year span of time.

## MATERIALS AND METHODS

**Study locale.** Faisalabad city had an estimated population of 2.6 million in 2006 and the entire District having 5.4 million people in 1998 (<http://en.wikipedia.org/wiki/faisalabad>). The district is very productive, because of the rich soil aided by

an efficient irrigation system it has earned a name for agricultural productivity. Different classes of farmers exist but in this district, most of them belong to the small land holding group that is and engaged in mixed farming systems. Livestock generates income to meet daily household expenditures, for home consumption and for honor. Buffaloes and cattle are premier dairy animals. Milk products meets domestic family needs and it is also sold as butter and ghee (butter fat) in villages on the town perimeter. Area is estimated to have 26,500 cattle and 76,700 buffalo (Moaeen-ud-din & Babar, 2006) serviced by, 35 veterinary hospitals, 40 dispensaries and 116 veterinary centers (District census report of Faisalabad, 1998, 2000). Besides the extensive network of modern veterinary facilities people use to treat their animals by ethno-veterinary practices (Hussain *et al.*, 2004).

**Data collection process.** An initial Rapid Rural Appraisal (RRA; Catley, 1999) was conducted in the peri-urban areas of Faisalabad, 25-30 km adjacent to the link roads from February 2007 to June 2007, to provide primary data on size of holdings and species of animals owned by each producer as a basis for selecting respondents for the data collection. Experienced and knowledgeable key respondents were identified. Two hundred and ninety five (295) key respondents (bovine and bubaline owners) from the outskirts of all four directions of Faisalabad metropolis were randomly selected and interviewed. The survey team was comprised of a veterinarian, veterinary assistant and a community leader from that area. Interviews, focused group discussions and field visits were used as the PRA (Catley, 1999) tools. Information was collected using a pre-designed questionnaire with open-ended interviews. Medicinal plants and plant parts used by the respondents were got identified from the Taxonomist, Department of Botany, University of Agriculture, Faisalabad, Pakistan and the voucher specimens were preserved in Ethno-veterinary research and development center, faculty of veterinary science, University of Agriculture, Faisalabad, Pakistan.

## RESULTS AND DISCUSSION

A total of 58 EVPs were documented; 41 based on plant usage and 11 were a combination of plants and animal products/chemicals/organic matter and six were based on animal products. Chemicals or organic matter were documented for different ailments in bovine and bubaline (Table I). Of the total 58 documented remedies, 11 were for treatment of diarrhea, seven each were for bloat and ectoparasites, six each were for zeharbad (a vernacular term used to describe a wide range of conditions associated with dropsy & decreased appetite), fever and anorexia, five were for mastitis, four for foot-and-mouth disease, two each for endoparasites, uterine prolepses and hemorrhagic septicemia.

Respondents used 39 plant species representing 26 families (Table II). Medicinal plants are integral component

of EVP as stated by McCorkle and Green (1998) so most of the remedies reported here were based on plants. Ethno-veterinary practices for digestive system disorders were in common use in the study area. Onion (*Allium cepa*), in the present study, is said to contain etheric oil that makes it carminative (Bullitta *et al.*, 2007). Some plants (*A. sativum*, *Solanum tuberosum*, *Syzygium cumini*, *Foeniculum vulgare*, *Brassica campestris* var. *Sarson* Prain, *Amomum subulatum*, *Punica granatum*, *Vernonia anthelmintica* & *Withania coagulans*) reported in the present study for the treatment of digestive system disorders also reported for same purpose in literature (Islam, 1999; Viegi *et al.*, 2003; Muhammad *et al.*, 2005). *Capsicum frutescens* and *Picrorhiza kurroa* were used for zeharbad treatments and have also been used in camels (Muhammad *et al.*, 2005). Similarly, in line with the present study, use of plant decoctions as external washes in foot and mouth disease have also been reported elsewhere (Nfi *et al.*, 2001; Kudi, 2003).

In case of mastitis, we found the most frequently used plant to be *A. sativum* has been reported as an antiseptic and vermifuge (Viegi *et al.*, 2003; Bullitta *et al.*, 2007). *Eruca sativa* was the most frequently used plant for ectoparasites around Faisalabad and has been reported in other studies in southern region of Punjab and Cholistan (Jabbar *et al.*, 2006b; Farooq *et al.*, 2008). Use of *F. vulgare*, *Trachyspermum ammi* and *Piper nigrum* in helminthosis has also been reported (Jabbar *et al.*, 2006a). *Ricinus communis*, *F. vulgare* and *Lepidium sativum* was a treatment for uterine prolapse in our study. Dilshad *et al.* (2008) likewise recorded the use of these plants for treatment of reproductive disorders in livestock. Some plants were used for more than one disease condition e.g., *B. campestris* var *Sarson* Prain was used for mastitis, bloat, diarrhea and ectoparasites. Similarly, *T. ammi* L. Sprague ex Turill. was dispensed in conditions like anorexia, endoparasites, ectoparasites, fever, bloat and diarrhea.

There are a variety of ways to prepare medicaments for use in livestock. Respondents prepared their remedies by pulverization, soaking in water and decoctions and administered *per os* or applied topically. Mode of preparation of EVPs varied according to the active ingredient to be extracted (McCorkle & Mathias-Mundy, 1992). The commonly used parts of plants were pepper corns, bulbs, seeds, fruits, leaves, flowers and rhizomes. The remedies were administered *per os* using different vehicles like jaggery, sugar, milk, milk fat and water. Use of these vehicles has been reported elsewhere (Muhammad *et al.*, 2005; Jabbar *et al.*, 2006b). Arbitrary quantities of vehicles for dilution were a common practice. There was wide variation in the doses and mode of preparation of remedies within and among different conditions reported in animals during the past one year. For example, *A. subulatum* Roxb. was fed to animals for: (i) fever, (60 g), (ii) anorexia, (30 g) and (iii) bloat, (30 or 10 g) (Table I).

Non-standardized doses have been criticized, because of toxicity issues, under dosing and cost can be reduced by

**Table I. Remedies used by the bovine and bubaline owners (n=295) for treatment of different ailments in bovine and bubaline during the past one year in peri-urban areas of Faisalabad**

Ailments n = no. of respondents	Remedies	Administration/Dosage	No. of Respondents Reporting usage	Who advised the treatment			
				Elders	Traditional Healer	Others	
<b>Zeharbad * n=128</b>	<i>Capsicum frutescens</i> L. fruit 250 g	Grated given <i>PO</i> for 4-5 days	100	100	-	-	
	<i>Eruca sativa</i> Mill. seed 125 g+ <i>Allium cepa</i> L. bulb 125g+ <i>Lepidium sativum</i> L. seed 125g+ <i>Linum usitatissimum</i> L. seed 125 g	Pulverized given <i>PO</i> for 4-5 days	6	6	-	-	
	<i>Zingiber officinale</i> Rosc. rhizome 125g+ <i>Allium sativum</i> L. bulb 250 g	Pulverized given <i>PO</i> for 2 days	3	3	-	-	
	<i>Strychnos Nux-vomica</i> Linn. aerial part 20 g+ <i>Calotropis procera</i> (Ait.) Ait. F. latex 10 ml+ <i>Lepidium sativum</i> L. seed 60g+ <i>Ferula assafoetida</i> L. resin 10 g	Mixture, given <i>PO</i> for 4 days	2	2	-	-	
	<i>Piper nigrum</i> L. pepper corn 125g+Milk fat 125 g	Mixblended, heated, given <i>PO</i> for 3 days	3	3	-	-	
	<i>Picrorhiza kurroa</i> Royle ex. Benth. rhizome 30g + <i>Halorrhena pubescens</i> Wall. ExG. Don. bark 30g+ <i>Embelia ribes</i> fruit 30 g	Pulverized, given <i>PO</i> for 4-5 days	1	1	-	-	
	<b>Diarrhea n=84</b>	<i>Punica granatum</i> L. fruit peel 125 g	Given <i>PO</i> for 2-3 days	21	21	-	-
<i>Foeniculum vulgare</i> Mill. seed 125g+ <i>Syzygium cumini</i> (L.) Skeels. leaf 125g+ Jaggery 125 g		Pulverized, given <i>PO</i> for 3 days	14	14	-	-	
<i>Punica granatum</i> L. dried seed 250g		Given <i>PO</i> for 2-3 days	9	9	-	-	
<i>Brassica campestris</i> L. Var. Sarson Prain seed cake 2 Kg		Soaked overnight, given <i>PO</i> for 4-5 days	7	7	-	-	
<i>Melia azedarach</i> L. fruit 30g+ <i>Punica granatum</i> L. 30g seed+ <i>Cinnamomum zeylanicum</i> Blume. 30g fruit + <i>Amomum subulatum</i> Roxb. fruit 30g		Pulverized, given <i>PO</i> three times in a day for 2 days	7	3	4	-	
<i>Foeniculum vulgare</i> Mill seed 125g+Jaggery 125 g		Pulverized given <i>PO</i> for 2-3 days	5	5	-	-	
<i>Withania coagulans</i> (Stocks) Dund. Fruit 60g		Pulverized, given <i>PO</i> for 3-4 days	3	3	-	-	
<i>Hordeum vulgare</i> L. seed 250g+ <i>Melia azedarach</i> L. leaf 125 g		Pulverized, given <i>PO</i> for 2 days	2	2	-	-	
<i>Anethum graveolens</i> L. seed 60 g+ <i>Trachyspermum ammi</i> L. seed 60g+ <i>Foeniculum vulgare</i> Mill seed 60 g + Jaggery 60 g		Pulverized, given <i>PO</i> for 2-3 days	2	2	-	-	
<i>Mentha longifolia</i> (L.) Huds. leaf 125g+Jaggery 125g		Pulverized given <i>PO</i> for 2-3 days	2	-	2	-	
<i>Camellia sinensis</i> (L.) O. Kuntze leaf 30g+Sugar 60g+Common salt 60 g+ <i>Citrus limon</i> (L.) Burm. F. fruit juice 4-5		<i>Camellia sinensis</i> (L.) O. Kuntze brewed in 1L water and sugar, common salt and <i>Citrus limon</i> (L.) Burm. F. juice added, drenched for 2 days	2	-	2	-	
<b>Bloat n=80</b>		<i>Brassica campestris</i> L. Var. Sarson Prain seed oil 250 ml+Kerosene oil	Drenched and kerosene oil applied on nostrils	14	14	-	-
		Turpentine oil 125ml+ <i>Brassica campestris</i> L. Var. Sarson Prain seed oil 125ml	Mixture drenched	13	13	-	-
		<i>Curcuma longa</i> L. rhizome 125g+ <i>Brassica campestris</i> L. Var. Sarson Prain seed oil 250 ml + Milk 125 ml + Water 1L	Mixture drenched	8	4	4	-
	<i>Trachyspermum ammi</i> L. seed 30g+Salt 125g+ Ammonium chloride 20g+ <i>Foeniculum vulgare</i> Mill seed 60 g	Pulverized, given <i>PO</i>	8	8	-	-	
	<i>Brassica campestris</i> L. Var. Sarson Prain seed oil 250 ml	Drenched	7	7	-	-	
	<i>Mentha longifolia</i> (L.) Huds. leaf. extract 10g+ <i>Amomum subulatum</i> Roxb. fruit extract 10g+ <i>Trachyspermum ammi</i> L. seed extract 10g+ <i>Cinnamomum camphora</i> (L.) J. Presl gum 30g	20 drops of mixture <i>PO</i> for 2 days	6	1	4	1	
	<i>Solanum tuberosum</i> L. fruit 3-4	Given, <i>PO</i>	1	-	-	1	
	<b>Fever/cough n=63</b>	<i>Trachyspermum ammi</i> L. seed 30g+Jaggery 125 g	Soaked overnight next morning grated with jaggery, given <i>PO</i> for 6-7 days	13	13	-	-
<i>Zingiber officinale</i> Rosc. rhizome 60g+ <i>Amomum subulatum</i> Roxb. Fruit 60g +Jaggery 125g		Pulverized, given <i>PO</i> for 3-4 days	13	4	5	4	
<i>Trachyspermum ammi</i> L. seed 30g+ <i>Allium cepa</i> L. bulb 250g+Milk fat 250 g + Jaggery 250 g + Ammonium chloride 30 g		Pulverized, mixture given for 3-4 days	11	11	-	-	
<i>Glycyrrhiza glabra</i> L. root 60 g		Pulverized given <i>PO</i>	7	7	-	-	
<i>Eucalyptus globules</i> leaf 6-7 Common salt 125g		Boiled, steam for 2 days Given <i>PO</i> for 2 days	7 1	7 1	- -	- -	

Table I. Continued

Table I. Continued

<b>Mastitis n=51</b>	<i>Allium sativum</i> L. bulb 250 g+ Milk 2L	Decoction given PO for 5 days	20	20	-	-
	<i>Capsicum frutescens</i> L. fruit 125 g	Pulverized cooked in water given PO 4- 5 days	14	14	-	-
	<i>Vernonia anthelmintica</i> Willd. seed 30 g+Burnt milk fat 60 g	Mixture given PO for 2 days	1	-	1	-
	<i>Piper nigrum</i> L. pepper corn 30g + <i>Capsicum annuum</i> L. fruit 125 g+ <i>Capsicum frutescens</i> L. fruit 125 g	Grated given PO for 6- 7 days	1	-	1	-
	<i>Brassica campestris</i> L. Var Sarson Prain seed oil 500 ml+Ammonium chloride 60 g+Brown sugar 500 g	Mixture, drenched for 2 days	1	-	1	-
<b>Ecto-parasites n=30</b>	<i>Eruca sativa</i> Mill seed oil	Given PO for 3 days	10	10	-	-
	<i>Eruca sativa</i> Mill seed oil + <i>Brassica campestris</i> L. var. Sarson Prain seed oil (Equal parts)	Mixture applied topically	3	3	-	-
	<i>Eruca sativa</i> Mill seed oil + <i>Brassica campestris</i> L. var. Sarson Prain (Equal parts)	Applied topically	3	3	-	-
	Hukka water ** + Sheep's milk (Equal parts)	Mixture applied topically	2	2	-	-
	<i>Eruca sativa</i> Mill. seed 125g+ <i>Trachyspermum ammi</i> L. Sprague ex Turrill. seed 125g	Soaked overnight, next morning grated, given PO	1	1	-	-
	Turpentine oil 60ml	Applied topically	1	1	-	-
	<i>Brassica campestris</i> L. var. Sarson Prain seed 125 ml+Common salt 60 g	Mixture Applied topically	1	1	-	-
	<b>Anorexia n=29</b>	<i>Piper nigrum</i> L. pepper corn 30g+ <i>Trachyspermum ammi</i> L. seed 30g+ <i>Foeniculum vulgare</i> Mill. Seed 60g+ <i>Withania coagulans</i> (Stocks)Dund. fruit 30g+ <i>Allium sativum</i> L. bulb 125g+ <i>Allium cepa</i> L. bulb 125g+ <i>Capsicum annuum</i> L. fruit 125 g	Pulverized, given PO for 3-4 days	5	5	-
<i>Amomum subulatum</i> Roxb. fruit 120g+Jaggery 250 g		Pulverized, given PO for 2- 3 days	4	4	-	-
<i>Amomum subulatum</i> Roxb. fruit 30g + <i>Foeniculum vulgare</i> Mill. seed 60g+Jaggery 125 g		Pulverized, given PO for 3-4 days	4	4	-	-
<i>Rosa damascena</i> MILL. flower 1Kg+Milk 1L		Decoction, drenched for 2 days	2	-	-	2
Copper sulphate 2g+ <i>Triticum aestivum</i> L. seed 125 g		Pulverized mixed in flour and bolus given PO	2	-	2	-
<i>Capsicum annuum</i> L. fruit 125g+ Jaggery 125 g		Pulverized, given PO for 3-4 days	2	2	-	-
<i>Acacia arabica</i> (Lam.)Willd. bark 125g		Boiled applied topically on vesicles for 5-6 days	12	12	-	-
<b>Foot-and-Mouth Disease n=22</b>	Fish 250g	Cooked and given PO for 2 days	5	5	-	-
	Brown sugar 125g+ Butter 125g	Mix blended and applied on vesicles	3	3	-	-
	<i>Hordeum vulgare</i> L. 250g+Water 2L	Mixture, drenched for 4 days	1	1	-	-
<b>Endo-parasites n=10</b>	<i>Foeniculum vulgare</i> Mill. Seed 125g+Jaggery 125 g	Pulverized, given PO for 2 days	6	6	-	-
	<i>Foeniculum vulgare</i> Mill. seed 60g+ <i>Trachyspermum ammi</i> L. Sprague ex Turrill. seed 30g+ <i>Piper nigrum</i> L. fruit 30 g+Common salt 60 g	Pulverized and given for 3 days	3	3	-	-
<b>Hemorrhagic septicaemia n=4</b>	Hot sand	Applied on swollen throat	2	2	-	-
	Hot dung cake	Applied on swollen throat	2	1	1	-
<b>Uterine prolapse n=2</b>	<i>Plantago Ovata</i> Forssk. husk 30g+Sugar 60g +Liquid paraffin 60g	Mixture given PO for 2 days	1	1	-	-
	<i>Lepidium sativum</i> L. seed 30g+ <i>Foeniculum vulgare</i> Mill. seed 30 g+ <i>Ricinus communis</i> fruit oil 30 ml+ Brown sugar 120 g	Decoction is prepared in 1L water, drenched b-i-d for 2 days	1	-	1	-

**Zeharbad**\*=A heavy loaded vernacular term used to describe a wide range of conditions associated with dropsy and decreased appetite

**Huqqa Water** \*\* = Water of indigenous smoking pipe

proper standardization of doses (Bakhiet & Adam, 1995; Longuefosse & Nossin, 1996). Materials other than plants were also used alone or in combination with plants including common salt, brown sugar, kerosene oil, turpentine oil, ammonium chloride, milk fat, dung cake, huqqa ka pannee (water of indigenous smoking pipe) and liquid paraffin (Table I). Use of materials other than plants has been reported in other studies (Mathias-Mundy & McCorkle, 1989; Davis *et al.*, 1995; Muhammad *et al.*, 2005).

The results of the present study point to the endowment of a rich 'cornucopia' of EVPs on the part of

respondents. They inherited this knowledge from their forefathers. Remedies reported in the present study were advised by the elders, traditional/road-side healers or others (Table I). Moreover, traditional/road-side healers are consulted, because of their easy availability and affordability (Shaikh & Hatcher, 2005). EVPs were not deemed as a panacea. According to the respondents sampled during the last one year, the diseases were treated either with EVPs alone or in combination with allopathic remedies or solely with allopathic treatments (Table III). Farmers almost exclusively use EVPs and rarely seek government

**Table II. Frequency of plant usage by bovine and bubaline owners (n=295) for different ailments in bovine and bubaline during past one year in peri-urban areas of Faisalabad**

Ailments n=no. of respondents	Plant species	Botanical family	Local Name	Frequency of usage	
<b>Zeharbad n=128</b>	<i>Capsicum frutescens</i> L.	Solanaceae	Surkh mirch	100	
	<i>Lepidium sativum</i> L.	Brassicaceae	Haloun	8	
	<i>Eruca sativa</i> Mill.	Brassicaceae	Taramira	6	
	<i>Allium cepa</i> L.	Liliaceae	Piaz	6	
	<i>Linum usitatissimum</i> L.	Linaceae	Alsi	6	
	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Sonth	3	
	<i>Allium sativum</i> L.	Liliaceae	Lahsan	3	
	<i>Piper nigrum</i> L.	Piperaceae	Kali mirch	3	
	<i>Strychnos Nux-vomica</i> Linn.	Loganiaceae	Kuchla	2	
	<i>Calotropis procera</i> (Ait.)Ait. F.	Asclepiadaceae	Aak	2	
	<i>Ferula assafoetida</i> L.	Apiaceae	Heing	2	
	<i>Picrorhiza kurroa</i> Royle ex. Benth.	Scrofulariaceae	Kourdh	1	
	<i>Halorrhena pubescens</i> Wall. ExG. Don.	Apocynaceae	Karu	1	
	<i>Embelia ribes</i>	Myrsinaceae	Amla	1	
	<b>Diarrhea n=84</b>	<i>Punica granatum</i> L.	Punicaceae	Anar	37
		<i>Foeniculum vulgare</i> Mill.	Apiaceae	Saunf	21
		<i>Syzygium cumini</i> (L.)Skeels.	Myrtaceae	Jaman	14
		<i>Brassica campestris</i> L. Var. <i>Sarson</i> Prain	Brassicaceae	Sarson	7
<i>Melia azedarach</i> L.		Meliaceae	Dharaik	7	
<i>Cinnamomum zeylanicum</i> Blume		Lauraceae	Dar chini	7	
<i>Amomum subulatum</i> Roxb.		Zingiberaceae	Baree illachi	7	
<i>Withania coagulans</i> (Stocks)Dund.		Solanaceae	Paneer	3	
<i>Hordeum vulgare</i> L.		Poaceae	Jow	2	
<i>Anethum graveolens</i> L.		Apiaceae	Soyae	2	
<i>Trachyspermum ammi</i> L.		Apiaceae	Ajwain	2	
<i>Mentha longifolia</i> (L.)Huds.		Lamiaceae	Poodina	2	
<i>Camellia sinensis</i> (L.)O. Kuntze		Theaceae	Chae ki patee	2	
<i>Citrus limon</i> (L.)Burm. F.		Rutaceae	Nibu	2	
<b>Bloat n=80</b>		<i>Brassica campestris</i> L. Var. <i>Sarson</i> Prain	Brassicaceae	Sarson	42
		<i>Trachyspermum ammi</i> L.	Apiaceae	Ajwain	14
		<i>Curcuma longa</i> L.	Zingiberaceae	Haldi	8
		<i>Foeniculum vulgare</i> Mill.	Apiaceae	Saunf	8
	<i>Mentha longifolia</i> (L.)Huds.	Lamiaceae	Poodina	6	
	<i>Amomum subulatum</i> Roxb.	Zingiberaceae	Baree illachi	6	
	<i>Cinnamomum camphora</i> (L.)J. Presl	Lauraceae	Mushk kafoor	6	
	<i>Solanum tuberosum</i> L.	Solanaceae	Aloo	1	
	<b>Fever/cough n=63</b>	<i>Trachyspermum ammi</i> L.	Apiaceae	Ajwain	24
		<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Sonth	13
<i>Amomum subulatum</i> Roxb.		Zingiberaceae	Baree illachi	13	
<i>Allium cepa</i> L.		Liliaceae	Piaz	11	
<i>Glycyrrhiza glabra</i> L.		Fabaceae	Mulathee	7	
<i>Eucalyptus globules</i>		Myrtaceae	Sufaada	7	
<b>Mastitis n=51</b>	<i>Allium sativum</i> L.	Liliaceae	Lahsan	20	
	<i>Capsicum frutescens</i> L.	Solanaceae	Surkh mirch	15	
	<i>Vernonia anthelmintica</i> Willd	Asteraceae	Kali ziri	1	
	<i>Piper nigrum</i> L.	Piperaceae	Kali mirch	1	
	<i>Capsicum annuum</i> L.	Solanaceae	Hari mirch	1	
<b>Ecto-parasites n=30</b>	<i>Brassica campestris</i> L. Var <i>Sarson</i> Prain	Brassicaceae	Sarson	1	
	<i>Eruca sativa</i> Mill.	Brassicaceae	Taramira	17	
	<i>Brassica campestris</i> L. var. <i>Sarson</i> Prain	Brassicaceae	Sarson	7	
	<i>Trachyspermum ammi</i> L. Sprague ex Turrill.	Apiaceae	Ajwain	1	
<b>Anorexia n=29</b>	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Saunf	9	
	<i>Amomum subulatum</i> Roxb.	Zingiberaceae	Baree illachi	8	
	<i>Capsicum annuum</i> L.	Solanaceae	Hari mirch	7	
	<i>Piper nigrum</i> L.	Piperaceae	Kali mirch	5	
	<i>Trachyspermum ammi</i> L.	Apiaceae	Ajwain	5	
	<i>Withania coagulans</i> (Stocks)Dund.	Solanaceae	Paneer	5	
	<i>Allium sativum</i> L.	Liliaceae	Lahsan	5	
	<i>Allium cepa</i> L.	Liliaceae	Piaz	5	
<b>Foot-and- Mouth Disease n=22</b>	<i>Rosa damascena</i> MILL.	Rosaceae	Gulab	2	
	<i>Acacia arabica</i> (Lam.)Willd.	Mimosaceae	Kikar	12	
	<i>Hordeum vulgare</i> L.	Poaceae	Jow	1	
<b>Endo-parasites n=10</b>	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Saunf	9	
	<i>Trachyspermum ammi</i> L. Sprague ex Turrill.	Apiaceae	Ajwain	3	
	<i>Piper nigrum</i> L.	Piperaceae	Kali mirch	3	
<b>Uterine prolapse n=2</b>	<i>Plantago Ovata</i> Forssk.	Plantaginaceae	Ispaghool	1	
	<i>Lepidium sativum</i> L.	Apiaceae	Haloun	1	
	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Saunf	1	
	<i>Ricinus communis</i>	Euphorbiaceae	Arind	1	

**Table III. Bovine and bubaline owners reporting usage of ethno-veterinary medicine /allopathic medicine/combination of ethno-veterinary medicine and allopathic medicine in bovine and bubaline for the ailments experienced during the past one year**

Ailments n = no. of respondents	No. of respondents reporting usage of ethno-veterinary remedies	No. of respondents reporting usage of allopathic remedies	No. of respondents reporting combine usage of ethno-veterinary and allopathic remedies
Zeharbad n = 128	95	27	6
Diarrhea n = 84	56	11	17
Bloat n = 80	57	14	9
Mastitis n = 51	15	17	19
Fever/cough n=63	32	22	9
Ecto-parasites n = 30	13	10	7
Foot-and Mouth Disease n=22	5	1	16
Endo-parasites n = 10	2	4	4
Anorexia n = 29	17	11	1
Hemorrhagic septicemia n=4	-	-	4
Uterine prolapse n = 2	2	-	-

run veterinary services for common ailments. Modern veterinary medicine is gradually becoming part of the animal health coverage when epidemic conditions occur especially foot-and-mouth disease and hemorrhagic septicemia. EVP is usually combined with orthodox or allopathic treatment when the former is ineffective.

## CONCLUSION

This is the first survey of EVP used for bovine and bubaline treatments in peri-urban areas of Faisalabad. Validation of new EVPs should be performed. Considerable concerns about efficacy, quality, safety and dose standardization remain. Natural products have a future in animal husbandry, particularly with increasing problems of pollution and chemical residues in food. Although EVM is a cost-effective alternative to orthodox veterinary medicine for common ailments, this practice is often not tractable for serious maladies and epidemics. There needs to be more integration of EVP and orthodox medicine and this study represents a step in that direction.

## REFERENCES

- Akhtar, M.S., Z. Iqbal, M.N. Khan and M. Lateef, 2000. Anthelmintic activity of medicinal plants with particular reference to their use in animals in the Indo-Pakistan subcontinent. *Small Rumin. Res.*, 38: 99–107
- Bullitta, S., G. Piluzza and L. Viegi, 2007. Plant resources used for traditional ethno veterinary phytotherapy in Sardinia (Italy). *Genet. Resour. Crop Evol.*, 54: 1447–1464
- Bakhiet, A.O. and S.E.I. Adam, 1995. Therapeutic utility, constituents and toxicity of some medicinal plants. *Vet. Human. Toxicol.*, 37: 255–258
- Catley, A., 1999. *Methods on the Move: A Review of Veterinary Uses of Participatory Approaches and Methods Focusing on Experiences in Dry Land Africa*, pp: 21–23. Sustainable Agriculture and Rural Livelihoods Programme of International Institute for Environment and Development (IIED), London, UK
- Davis, D.K., K. Quraishi, D. Sherman, A. Sollad and C. Stem, 1995. Ethnoveterinary medicine in Afghanistan: an overview of indigenous animal health care among Pashtun Koochi nomads. *J. Arid Environ.*, 31: 483–500

- Dilshad, S.M.R., N. Rehman, Z. Iqbal, G. Muhammad, A. Iqbal and N. Ahmad, 2008. An inventory of the ethno veterinary practices for reproductive disorders in cattle and buffaloes, Sargodha district of Pakistan. *J. Ethnopharmacol.*, 117: 393–402
- District census report of Faisalabad, 1998 and 2000. *Census Publication No. 116*. Population census organization, statistics division, Government of Pakistan, Islamabad, Pakistan
- Farooq, Z., Z. Iqbal, S. Mushtaq, G. Muhammad, M.Z. Iqbal and M. Arshad, 2008. Ethnoveterinary practices for the treatment of parasitic diseases in livestock in Cholistan desert (Pakistan). *J. Ethnopharmacol.*, 118: 213–219
- Fielding, D., 1998. *Ethnoveterinary Medicine in the Tropics-Key Issues and the Way Forward?* Paper presented to the topical agricultural association seminar on Sep. 26<sup>th</sup> 1998, on local knowledge in tropical agricultural research and development, Durham University, Durham, UK
- Hussain, S., M.Z.Y. Hassan, Y. Mukhtar and S. Ali, 2004. Gender role in livestock rearing and effect of National Rural Support Programme (NRSP) in livestock training course in Kotli (Azad Kashmir). *Int. J. Agric. Biol.*, 6: 424–425
- Islam, M.M. and M.A. Kashem, 1999. Farmer's use of ethno veterinary medicine (EVM) in the rearing and management of livestock: An empirical study in Bangladesh. *J. Sustain. Agric.*, 13: 39–57
- Iqbal, Z., M. Lateef, M. Ashraf and A. Jabbar, 2004. Anthelmintic activity of *Artemisia brevifolia* in sheep. *J. Ethnopharmacol.*, 93: 265–268
- Iqbal, Z., M.N. Khan and A. Qudoos, 2002. *Parasitic Research on Domesticated Animals of Pakistan: A Monograph*. Higher Education Commission, Islamabad-Pakistan
- Jabbar, A., M.A. Raza, Z. Iqbal and M.N. Khan, 2006a. An inventory of the ethno botanicals used as anthelmintics in the southern Punjab (Pakistan). *J. Ethnopharmacol.*, 108: 152–154
- Jabbar, A., Z. Iqbal and M.N. Khan, 2006 b. *In vitro* anthelmintic activity of *Trachyspermum ammi* seeds. *Phcog Mag.*, 2: 126–129
- Kudi, C.A., 2003. Ethnoveterinary, complementary and low cost treatment and management of working animals. In: *The Challenge of Improving the Transport Animal Welfare in the World: Ways Forward*. Workshop Held by World Association for Transport Animal Welfare and Studies (TAWS), 24 April 2003, Silsoe Research Institute, UK
- Longuefosse, J.L. and E. Nossin, 1996. Medical ethnobotany survey in Martinique. *J. Ethnopharmacol.*, 53: 117–120
- McCorkle, C.M. and E.C. Green, 1998. Intersectoral health care delivery. *Agric. Hum.*, 15: 105–114
- Mathias, E., 2004. Ethnoveterinary medicine: Harnessing its potential. *Vet. Bull.*, 74: 27N–37N
- Mathias-Mundy, E. and C. McCorkle, 1989. *Ethnoveterinary Medicine: An Annotated Bibliography, Bibliographies in Technology and Social Change*, No. 6, p; 199. Technology and Social Change Program, Iowa State University, Ames, Iowa 50011, USA
- McCorkle, C.M. and E. Mathias-Mundy, 1992. Ethno veterinary medicine in Africa. *J. Int. African Ins.*, 62: 59–93

- Monteiro, A.M., S. Wanyangu, D.P. Kariuki, R. Bain, F. Jackson and Q.A. McKellar, 1998. Pharmaceutical quality of anthelmintics sold in Kenya. *Vet. Rec.*, 142: 396–398
- Muhammad, G., M.Z. Khan, M.H. Hussain, Z. Iqbal, M. Iqbal and M. Athar, 2005. Ethnoveterinary practices of owners of pneumatic-cart pulling camels in Faisalabad city (Pakistan). *J. Ethnopharmacol.*, 97: 241–246
- Moaeen-ud-Din, M. and M.E. Babar, 2006. *Livestock Farming in Peri-urban Areas of Faisalabad, Pakistan, Livestock Research Rural Development*, Available at <http://www.cipav.org.co/lrrd/lrrd18/moae18012.htm>. Accessed on 9 October 2007
- Nfi, A.N., J.N. Mbanya, C. Ndi, A. Kameni, M. Vabi, D. Pingpoh, S. Yonkeu and C. Moussa, 2001. Ethnoveterinary medicine in the northern provinces of Cameroon. *Vet. Res. Commun.*, 25: 71–76
- Shaikh, B.T. and J. Hatcher, 2005. *Complementary and Alternative Medicine in Pakistan: Prospects and Limitations*. Evidence-based Complementary and Alternative medicine. <http://ecam.oxfordjournals.org> (Last accessed 13-08-2008)
- Tabuti, J.R.S., S.S. Dhillion and K.A. Lye, 2003. Ethnoveterinary medicine for cattle (*Bos indicus*) in Bulamogi county Uganda: plant species and mode of use. *J. Ethnopharmacol.*, 88: 279–286
- Viegi, L., A. Pieroni, P.M. Guarrera and R. Vangelisti, 2003. A review of plants used in folk veterinary medicine in Italy as basis for a databank. *J. Ethnopharmacol.*, 89: 221–224

(Received 20 April 2009; Accepted 28 May 2009)