

PREVALENCE AND CHEMOTHERAPY OF TRICHOSTRONGYLOIDS IN CAMELS IN CHARSADA

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ABSTRACT

The prevalence of Trichostrongyloids among camels in Charsada district was measured and trials conducted to determine the efficacy of *Saussurea lappa* and *Fumaria parviflora* and Albendazole. 500 camels were examined, and trichostrongyloids were observed in 175 (35%). *Haemonchus longisteps* was the most predominant specie with the prevalence of (52.57%), followed by *Trichostrongylus probolurus*, *Ostertagia Ostertagi*, *Dictyocaulus* and *Nematodirus dromedari* being 10.85%, 9.71%, 9.14% and 9.14% respectively. *Cooperia* was found to be the least prevalent 8.57% parasite. Young animals were found to be at higher risk of infection than adult animals. The efficacy of *Saussurea lappa* was 65.85%, *Fumaria parviflora* was 46.34, and albendazole was (66.66%) at one dose. Whereas the efficacy after second dose was of *Saussurea lappa* (85.36%), *Fumaria parviflora* was (82.92 %), and albendazole was (97.4 3%). Making albendazole is the most effective treatment against trichostrongyloids in camels.

Key words: Trichostrongyloids, prevalence, chemotherapy, camel.

INTRODUCTION

Camels play an important role in the socio-economic system of Asia and Africa. Pakistan being the third one among the camel rearing countries in the world having 1.2 million Dromedary camels (FAO 2000), with an annual increase of 1.62% (Ashraf *et al.*, 2014). In camel, parasitic diseases causes huge economic losses, in terms of low production and medication cost. The camels are infected by a large number of internal parasites including, *Haemonchus* and *Trichostrongylus*. The *Haemonchus* causes Haemonchosis which is the most common pathogenic infection with almost 100% morbidity. Symptoms include emaciation, anemia, and oedema of lower limbs, eosinophilia, hypoproteinemia and hypoalbuminemia. Pica is associated with haemonchosis and worm infections in camels. *Trichostrongylus* spp. may contribute to the debilitating effects. Anemia is one of the pathogenic effects of gastrointestinal parasites (Soulsby, 2006). These Helminths produces lesions which could reduce the productivity of the infected dromedary

through disturbance of intestinal absorption (McGavin and Zachary 2007). Disease states of infestation results in reduce production of wool and meat by losing appetite and poor consumption of nutritional substances, which may lead to low fertility, abortion and death (Windsor *et al.*, 1992). Ethnoveterinary practice includes all the traditional methods and indigenous knowledge usefull for the maintenance of livestock health and production (Wanzala *et al.*, 2005). Modern allopathic drugs are usually expensive and unavailable in far flung areas of many communities and people mostly depend on ethnoveterinary practice to solve such problems (Kumar, 2007 and Chafe *et al.*, 2008). The present study was therefore launched aiming to evade the prevalence of *Trychostrongyloids* in camels of Charsadda as there is very scanty information available on helminthes infection in camels (Bekele 2002) and the comparative efficacy of two medicinal plants (*saussurea lappa* and *Fumaria parviflora*) and an allopathic drug (Albendazole).

MATERIALS AND METHODS

Experimental Design

500 fecal samples were collected from camels in and around Charsada for trichostrongyloids. The samples were examined at Veterinary Research Institute Peshawar. All animals were kept under similar

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feeding and management conditions throughout the course of treatment. The studies were conducted during late summer months. A detailed history of each individual animal was recorded.

Animal utilized

Animals were casually arranged into 4 groups i.e. A, B, C and D with 15 camels in each group. In group A and B animals were treated with *Saussurea lappa* (Qust-e-shireen) @60mg/kg body weight, and *Fumaria parviflora* (shahtra) @60mg/kg body weight respectively. While the animals in group C was treated with Albendazole at dose rate of 10 mg/kg body weight and group D was kept as negative control. Efficacy of drug was calculated as described by Varady *et al.* (2004).

Preparation and administration of drugs

The herbal preparations were dried, finely ground to powder form and stored in sealed glass bottles at 4 °C. Gum tragacanth was also finely powdered and a 2% w/v aqueous solution was prepared and stored in a refrigerator at 4 °C. At the time of treatment, a calculated amount of herbal drugs were weighed according to recommended dosages and suspended in 100 ml of 2% gum solution given P.O. *Saussurea lappa* and *Fumaria parviflora* were suspended in gum solution due to their lower solubility.

Parasitological techniques

The qualitative examination of faecal sample was done by light microscopy, sedimentation and flotation methods. While quantitative faecal inspection was done using Mac-Master (egg counting) technique as described by Souls by, 2006. Faeces were examined on day zero day and on day 3rd, 7th, and 18th post

treatment (Maqbool *et al.*, 2004). The effect of drugs on pregnancy, milk yield and body mass were also recorded along with side effect of drugs. Efficacy of drug was evaluated as described by Varady *et al.* (2004).

RESULTS

Efficacy of *Saussurea lappa*

In clinical cases EPG count of trichostrongyloids in camels treated with *saussurea lappa* show an accumulative tendency in control (untreated) animals. A single dose of 60mg/kg body weight of *Saussurea lappa* show a decrease of 14.63%, 41.46% and 65.85% in EPG counts on the 3rd, 7th, and 18th day respectively.

Efficacy of *Fumaria parviflora*

Fumaria parviflora at 60 mg/kg dose cause a decrease of 12.19%, 31.70% and 46.34% in EPG counts on the 3rd, 7th, and 18th day, respectively.

Efficacy of Albendazole

Allopathic drug, i.e. albendazole, at the recommended dose of 10 mg/kg caused 12.82% reduction on the 3rd, 34.46% on 7th, and 66.66% on 18th day.

Relative efficacy of all three drugs at their optimum levels on various days as compared with (day zero) showed that all drugs had a significant anti-trichostrongyloids efficacy effect. The highest efficacy was shown by Albendazole and *Saussurea lappa* were 66.66% and 65.85% respectively, while efficacy of *Fumaria parviflora* was 46.34%.

Table: 1: Overall Prevalence of Trichostrongyloids in camels.

No of camels examined.	Name of parasites	No of positive	% of infection
500	<i>Haemonchus longisteps</i>	92	52.57%
	<i>Trichstrongylus probolurus</i>	19	10.85%
	<i>Ostertagia ostertagi</i>	17	9.71%
	Dictyocaulus	16	9.14%
	Nematodirus	16	9.14%
	Cooperia	15	8.57%
Total		175	35%

Table: 2: Efficacy in Percentage of various drugs against trichostrongyloids in camels at different days.

Drugs	No of Animals	Efficacy in percentage on different days		
		First treatment (%)		
		3 rd	7 th	18 th
<i>Saussurea lappa</i>	15	14.63	41.46	65.85
<i>Fumaria parriflora</i>	15	12.19	31.70	46.34
Albendazole	15	12.82	34.46	66.66

DISCUSSION

Prevalence of Trichostrongyloids

The overall results among camels in district Charsada Kpk, showed that among 500 (Total) 175 (35%), were found positive. Six species which were identified are in order of intensity are *Haemonchus longistipes*, *Trichostrongylus probolurus*, *Ostertagia ostertagi*, *Dictyocaulus*, *Nematodirus dromedari*, and *Cooperia*. The high incidence of *Haemonchus longistipes* occur due to changes in grazing behaviour from feeding on upper bushes, to feeding on grasses, as a results of removal of bushes, shrubs and trees for rain fed mechanized crop production schemes. Thus increasing the chances of pitching up of ova and larvae from pasture was also reported by El Khoully and El-Khawad (2011). Abdul Salam and Farah (1988), Anwar (1987), Burji *et al.* (2010), Tajik *et al.* (2011). It was also noted that the overall incidence of endoparasites was higher in younger animals than adults this was supported by Swai *et al.* (2011). They reported that younger animals can act as source of infection for adults. It was reported that overall infection was higher in females than males; this was in line with Steward (1950), Raisin ghani (1992) and Sharrif *et al.* (1997). It has shown that rate of infection in the present study was nearly similar to the above stated workers in various regions throughout the world. However Abu-Bakr *et al.* (2000), Arzoun *et al.* (1984), Burji (2010), Bamaiyi and Kalu (2012), Banaja and Ghandur (1994), Bakele (2002), Bihari and Kawasmeh (1980), Kayum *et al.* (1992), Parsani *et al.* (2008) and Raza *et al.* (2007) recorded diverse prevalence in different countries of the world. These findings are somewhat in consistency with the results of the present study; the change may be due to diverse geographical regions and varied environmental conditions.

Chemotherapy

For the operative chemotherapy and intentional chemoprophylaxis of endoparasites of camels, a safe drug is required with high activity against all stages of parasites. Modern drugs are efficacious but most of them possess adverse effects, Rewatkar (2008), thus marketing of new, highly therapeutic and cheap drug can contribute to the field of research. The antiparasitic activity of indigenous drugs including *Saussurea lappa* and *Fumaria parviflora* were evaluated for their comparative efficacies with each other and with modern allopathic drug i.e. Albendazole.

Saussurea lappa (Qust-e-shireen) at 60 mg/kg body weight was 65.85 percent effective at single dose. Similar findings were also reported by Kailani *et al.* (1995), Itty *et al.* (1997), Waller and Prichard (2001), Maqbool *et al.* (2004) and Stafford and Coles (2007).

Efficacy of *Fumaria parriflora* at 60 mg/kg body weight was 46.34% effective at one dose level. Nearly similar results were recorded by Akhter and Javed (1985). Akhter and Farah (1986), and Waller and Prichard (2001), Maqbool *et al.* (2004), Stafford and Coles (2007) reported that this drug contain 40% alkaloid which might be its active ingredient the high efficacy or reduction in the parasite burden may be due to its active ingredient. It was concluded that *Fumaria parriflora* at dose rate of 60 mg/kg body weight give good result for the treatment of various endoparasitic infections in camels.

Albendazole was given to camels at recommended dose rate i.e. 10 mg/kg body weight and caused 66.66 percent reduction in EPG count. Similar results were also showed by various workers in various parts of the world as Al Qudah *et al.* (1998), Akhter and Javed (1991), and Varady *et al.* (2004).

Conflict of interest

The authors have no conflict of interest regarding this research work.

Ethical Statement

The animals and human rights were not violated or ignored. All the participants were assigned on their well with signing consent before inclusion into the study.

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مدى انتشار وعلاج طفيل التريكوسترونجليودس فى الابل

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لقد تم قياس مدى انتشار طفيل التريكوسترونجليود فى الابل منطقة تشارسادا بافغانستان وكذلك قياس مدى فاعليه نبات القسط ونبات دخان الارض والبنزازول فى علاج تلك الديدان. تم فحص ٥٠٠ ابل ولوحظ ان نسبة الاصابه بالتريكوسترونجليود بانواعها المختلفه تصل الى ١٧٥ (٣٥%) منها الهومكس وهى الاكثر انتشارا بنسبه ٥٢.٧٥% ثم التريكوسترنجليس والاسترتاجيا والدكتوكليس بنسبه ١٠.٨٥%، ٩.٧١% و ٩.٤١% و ٩.٤١% على التوالي وتم العثور على الكوبيريه وهى الاقل انتشارا بنسبه ٨.٥٧%. ووجد ايضا ان الحيوان الصغير اكثر عرضه للاصابه من الحيوان البالغ وعلى مدى العلاج ووجد ان فاعليه نبات القسط حوالى ٦٥.٨٥% ونبات دخان الارض ٤٦.٣٤% والبنزازول ٦٦.٦٦% بجرعه واحده فقط. فى حين انه كانت فاعليه الجرعه الثانيه كالاتى ٨٥.٣٦% لنبات القسك و ٨٢.٩٢% لنبان دخان الرض بينما للبنزازول كانت ٩٧.٣٩% وبذلك يكون البنزازول هو الاكثر فاعليه لعلاج التريكوسترنجليود فى الابل.