

PREVALENCE OF GASTROINTESTINAL PARASITES IN
BUFFALOES (*BUBALUS BUBALIS*) IN AND AROUND TIRUPATI, INDIA

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ABSTRACT

The prevalence of gastro-intestinal parasites of buffaloes was studied in and around Tirupati of Andhra Pradesh for a period of one year through coprological examination. A total of 694 buffaloes were examined; among them, 279 (40.20%) buffaloes were found infected with one or more species of gastro-intestinal parasites. Ten species of gastro-intestinal parasites were identified; of them, seven species were helminthes, namely, Amphistome, Fasciola, Strongyles, Strongyloides, Toxocara, Trichuris, Moniezia spp. and two species were protozoa, namely, Buxtonella, Eimeria and Entamoeba spp. Amphistomes were predominant (15.42%) followed by Strongyles (6.19%). Among the gastro-intestinal parasites mixed infection was common (3.17%). In this study, prevalence of parasites in relation to age and seasonal dynamics was also studied. Significantly ($p < 0.05$) higher prevalence of gastro-intestinal parasites was observed in the rainy season followed by the summer and winter seasons. In the age groups, adults (above 1 year) were most ($p < 0.05$) susceptible to gastro-intestinal parasites. Based on the results on the prevalence of gastro-intestinal parasites in buffaloes it is obligatory to follow integrated strategies and measures to control

gastrointestinal parasitic infections in buffaloes in and around Tirupati.

Keywords: gastrointestinal parasites, buffalo, prevalence, age, season

INTRODUCTION

Bubalus bubalis (buffalo) is one of the most important species of domestic livestock as a source of dairy, meat, manure and drought power and plays an important role in Indian rural economy. In India, the majority of small and marginal farmers are more dependent on buffaloes than cattle for their livelihood as they also serve as an insurance against the risk of crop failure due to natural calamities (Dhanda, 2004). The Food and Agriculture Organization (FAO, 2000) has termed the buffalo as an important but 'an asset undervalued'. Buffalo diseases have been considered as one of the major constraints for the development of the industry in the developing countries causing substantial economic loss to poor subsistence farmers (Jithendran and Bhat, 1999). The parasitic diseases, gastro-intestinal helminthiasis, coccidiosis, fasciolosis and mange are not less important in buffaloes than other infectious diseases (Griffiths, 1974). Epidemiological survey

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of parasitic infection is an important aid to combat infections more effectively and in controlling economic losses by adopting effective control measures. The incidence of G.I. parasites in cattle and buffaloes from different parts of India has been published from time to time for this purpose (Sanyal *et al.*, 1992; Pal *et al.*, 2001; Muraleedharan, 2005; Ashutosh Wadhwa *et al.*, 2011.). The present study was undertaken to study the prevalence of common G. I. parasites in and round Tirupathi, Andhra Pradesh, India.

MATERIALS AND METHODS

Six hundredninety-four buffaloes from six surrounding villages and organized dairy farms located in and around Tirupati were randomly selected for the study. The faecal samples were collected as per standard procedure throughout the year for a one-year period for observing the G. I. parasites in different seasons *viz.* summer (March-June), monsoon or rainy (July-October) and winter (November-February). The faecal samples were examined by direct microscopic method and concentration methods (sedimentation and floatation) and samples positive for helminth eggs and protozoan cysts/oocysts were specifically identified and counted (Soulsby, 1982). Samples positive for coccidian oocysts were preserved in 2.5% potassium dichromate solution for species specific identification. The quantum of infection among the animals was derived in terms of percentage positive of the total samples examined. Data obtained were classified according to age and season and were analyzed as per standard statistical techniques (Snedecor and Cochran, 1980).

RESULTS AND DISCUSSION

The prevalence of various gastrointestinal parasitic infections in buffaloes is summarized in Table 1. Faecal examination of 694 buffaloes revealed 40.20 percent incidence of parasitic infections. Jagannath *et al.* (1988) and Hirani *et al.* (1999) also reported 42.12 percent and 38.86 percent of incidence of gastrointestinal helminthiasis in buffaloes in Karnataka and Gujarat, respectively. Whereas Muraleedharan (2005) and Ashutosh Wadhwa *et al.* (2011) recorded the lower percentages of 20.45 percent in Karnataka and 13 percent in Rajasthan, respectively. Slightly higher prevalence was observed by Anish yadav *et al.* (2004) and Mamun *et al.* (2011) who recorded 60.51% and 61.02% in Jammu and Bangladesh. Low and high prevalence of gastrointestinal helminthiasis from different parts of India could be due to the deworming of buffaloes and the managerial practices followed in the particular area. A significant ($P<0.05$) relationship between age group and incidence of parasitism was observed in the present study. The results indicated higher prevalence rate in adults than young buffaloes (Anish yadav *et al.*, 2004); this could be due to the grazing of adult animals in and around marshy lands that were infested with infective stages of parasites. Contrary to this Samanta and Santra (2009) reported high prevalence rate in the below-one-year age group.

Amphistome, *Fasciola* sp., *Strongyles*, *Strongyloides* sp., *Toxocara* sp., *Trichuris* sp., *Moniezia* sp., *Buxtonella* sp., *Eimeria* sp., and *Entamoeba* sp. were recorded in the studied geographical area. The helminthic infection was 30.54 percent followed by protozoa (6.48%). The prevalence of amphistomes recorded was higher (15.42%) than other common parasitic infections.

Table 1. Seasonal and age wise prevalence of gastrointestinal parasites of buffaloes.

Season	Age group	No. of samples examined	Helminthes								Protozoa				Mixed	Total positive samples	
			<i>Amphistome</i>	<i>Fasciola</i>	<i>Strongyles</i>	<i>Strongyloides</i> sp.	<i>Toxocara</i> sp.	<i>Trichuris</i> sp.	<i>Moniezia</i> sp.	Total	<i>Balanitium</i> sp.	<i>Eimeria</i> sp.	<i>Entamoeba</i> sp.	Total			
Monsoon	<1 yr	76	1	-	-	2	8	-	-	-	-	-	4	1	5	3	19
	1-3 yr	117	24	2	10	4	-	-	3	1	1	8	1	1	10	1	55
	3 yr	198	45	6	18	9	-	-	4	1	1	13	-	-	13	4	100
	Total	391	70	8	28	15	8	7	2	138	21	5	2	28	8	174	
Winter	<1 yr	20	-	-	1	1	1	3	-	-	-	-	1	-	1	1	5
	1-3 yr	24	3	-	2	-	-	1	1	1	1	1	1	1	3	2	12
	3 yr	87	12	2	3	-	-	-	-	5	-	-	-	-	5	5	27
	Total	131	15	2	6	1	1	1	1	27	6	2	1	9	8	44	
Summer	<1 yr	19	-	-	1	1	1	4	-	-	-	-	1	-	1	2	7
	1-3 yr	63	6	2	4	3	-	18	3	2	1	3	-	-	3	1	22
	3 yr	90	16	2	4	3	-	25	4	-	-	-	-	-	4	4	32
	Total	172	22	4	9	7	1	47	7	3	1	7	1	8	6	61	
Grand total	<1 yr	115	1	-	2	4	10	18	1	-	-	6	1	7	6	31	
	1-3 yr	204	33	4	16	2	-	69	3	6	3	12	2	16	4	89	
	3 yr	375	73	10	25	12	-	125	4	4	1	22	-	22	12	159	
	Total	694	107	14	43	18	10	212	34	8	3	45	8	22	22	279	
% Infection		15.42	2.02	6.19	2.59	1.44	1.58	0.57	30.54	4.89	1.15	0.43	6.48	3.17	40.20		

Similar findings on the prevalence of higher percentages of amphistome infections in bovines have been recorded from Gujarat, Kashmir and Bangladesh (Hirani *et al.*, 1999; Anish yadav *et al.*, 2004; Mamun *et al.*, 2011). Buffaloes are usually exposed to a higher risk of infection with snail-borne helminthes due to their tendency to seek rivers, pools or swamps for wallowing (Cockrill, 1974).

Mixed infections of *Toxocara vitulorum*, *Strongyloides papillosus* and *Eimeria* sp. were observed in the below-one-year age buffaloes as pointed out by Bharkad *et al.* (1999), but ova of Amphistomes and cysts of Buxtonella were observed only in animals above one year of age. Mixed infection with ova of *Toxocara* sp. and *Strongyloides* sp. could be due to their common prenatal and transmammmary route of infection. In addition *Toxocara vitulorum* ova were exclusively identified in below-one-year age buffaloes as this parasite is spontaneously expelled at the age of up to 4 months (Usharani Devi *et al.*, 2000). Absence of toxocarosis in aboveoneyear age animals might be due to the arrested larval development resulting in non-patent infection. The infection rates of *Moniezia* sp. (0.57%) and *Eimeria* sp. (1.15%) were similar to the report of Muraleedharan (2005) and were quite low compared to the report from Gujarat (Hirani *et al.*, 1999).

Seasonal effect on prevalence of G. I. parasites in the present study revealed that the infection rate was significantly higher ($P < 0.05$) during the rainy season (44.50%) followed by the summer (35.46%) and winter (33.58%) seasons similar to the observations reported by Mamun *et al.* (2011). The environmental conditions of this region are hot and humid, and thus favourable for the development and survival of preparasitic stages leading to increased availability of infective

stages on pasture. Sanyal and Singh (1995) also indicated an increased parasitic burden in hosts and pastures during the rainy season, based on nationwide survey on parasitic epidemiology in dairy animals in seven different agro climatic zones of India. With the onset of winter, the infection rate gradually decreased, agreeing with the report of Samanta and Santra (2009). The results of the present study revealed that the prevalence of gastrointestinal parasites in buffaloes is very common and quite severe. Keeping in view these factors, strategic treatment and control programme may be formulated to control gastrointestinal parasitic infections in buffaloes in Tirupati and elsewhere in Andhra Pradesh.

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