

## Gastrointestinal parasitic infection profile of Bovines and Caprines at Jalpaiguri

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### ABSTRACT

A total of 3056 faecal samples (1902 from adult cattle, 725 from calves, 174 from buffaloes & 255 from sheep & goats) were collected and examined from April 2002 to March 2006 from different localities in Jalpaiguri District, West Bengal which owing to its proximity to the hills has climate with heavier rainfall and temperature seldom excessive. Atmosphere is highly humid throughout the year. A total of 1555 (50.88%) samples were found to be positive for different helminthic infections. *Paramphistomum* sp. (21.2%) were predominant followed by cyst of *B. coli* (7.6%). Prevalence of *Fasciola* sp., *Gastrothylax* sp., *Ascaris* sp., *Bunostomum* sp., *Trichuris* sp., *Strongyle* sp., *Strongyloides* sp., *Metastrongyle* sp., *Trichostrongyle* sp., *Oocyst of Eimeria* sp. was 0.5%, 3.2%, 4.4%, 0.8%, 2.4%, 5.3%, 1.7%, 0.2%, 0.9%, 1.3% respectively. Only 44 (1.4%) cases were found positive for mixed helminthic infection out of which the most common cases of mixed infection were of *Strongyloides* sp. and *Paramphistomum* sp. Helminthic infection was recorded throughout the year with seasonal variation i.e., highest during rainy (66.24%) followed by summer (44.95%) and winter (30.68%) respectively.

**Key words:** Gastrointestinal helminths, Cattle, Buffaloes, Goat, Sheep, Prevalence, Jalpaiguri.

### INTRODUCTION

Helminths are multicellular pathogens which infect considerably high proportion of global human and domesticated animal populations. Helminthic infection is a major constraint of livestock and causes great economic losses to dairy industry by way of retarded growth, low productivity and increased susceptibility of animals to other diseases. In spite of significant production losses, which may run into millions of rupees (Jitendran and Bhat, 1999), the problem is persisting because of chronic and insidious nature. The losses due to clinical parasitism can be minimized by early detection and timely initiation of prophylactic measures. The incidence of parasites in cattle and buffalo has been reported from different states of India (Krishna *et.al.*, 1989, Hirani *et.al.*, 1999; Aggarwal *et.al.*, 2002). In Jammu & Kashmir,

the incidence has been reported by Alam *et.al.* (1994) and Raina *et.al.* (1999). Limited information regarding gastrointestinal helminthic infection in cattle, buffaloes, goat, sheep, for the district of Jalpaiguri, West Bengal is available. Therefore, the present study was undertaken to investigate gastrointestinal helminthic infection profile of cattle, buffaloes, sheep and goats at Jalpaiguri District, West Bengal.

### MATERIAL AND METHODS

Jalpaiguri district under study lies between 26°16' and 27°0' north latitude and between 88°4' and 89°53' east longitude situated at North of West Bengal, extending along Indo-Bangladesh and Indo-Bhutan International borders. with rivers, ponds and wells as a source of drinking water. Owing to its

proximity to the hills it has climate with much heavier rainfall and the temperatures seldom excessive. The cold season is from mid-November to the end of February, followed by the hot season from March to May. The period from June to about beginning of October is the South West monsoon season. October to mid-November constitute the post monsoon season. Average rainfall is 3508 m.m. per year. The atmosphere is highly humid throughout the year.

In total 3056 fecal samples (1902 from adult cattle, 725 from calves, 174 from buffaloes & 255 from sheep & goats) collected randomly over a period of 4 (four) years from April, 2002 to March 2006 distributed in 13 blocks (i.e., Jalpaigur Sadar, Rajganj, Maynaguri, Dhupguri, Falakata, Malbazar, Nagrakata, Matiali, Madarihat, Kalchini, Alipuduar-I, Alipurduar-II, Kumargram) in Jalpaiguri District (West Bengal) for laboratory examination. Samples were collected either directly from the rectum or when freshly passed and subjected to direct microscopic examination, as well as floatation (Salt saturated solution and sedimentation methods) (Soulsby, 1982). Severity of infection was adjudged on the basis of low infection (+), moderate infection (++) and heavy infection (+++), as per Singh and Baxi (1995). Animals under investigation were in semi-covered houses and were mostly maintained on natural vegetation on common grazing lands, wastelands and uncultivated lands.

## RESULTS AND DISCUSSION

Results of the studies are presented in the Table 1. Out of 3056 samples collected, 1555 (50.88%) were found positive for different helminthic infections. Among various infections, maximum incidence was of *Paramphistomum* sp. (21.2%) followed by cyst of *B.coli* (7.6%). Other helminthic infections observed were *Fasciola* sp. (0.5%), *Gastrothylax* sp. (3.2%), *Ascaris* sp. (4.4%), *Bunostomum* sp. (0.8%), *Trichuris* sp. (2.4%), *Strongyle* sp. (5.3%), *Strongyloides* sp. (1.7%), *Metastrongyle* sp. (0.2%), *Trichostrongyl* sp. (0.9%), *Oocyst of Eimeria* sp. (1.3%). As many as 44 samples (1.4%) had mixed parasitic infection out of which the most common cases of mixed infection were of *Strongyloides* sp. and *Paramphistomum* sp.

High incidence of parasitism in this area correlates to the findings of Alam *et al.* (1994) and Raina

*et al.* (1999) at R.S.Pura, Jammu. The present result showed higher prevalence in adult cattle and calves, which are partially in agreement with the result of Banerjee and Agarwal (1992) and Choudhury *et al.* (1994). Higher prevalence of *Paramphistomum* sp. in cattle (adult and calf) was recorded. Higher prevalence of Amphistomiasis in buffaloes (Krishna *et al.*, 1989) and Fasciolosis in cattle (Singh *et al.*, 1993) was observed in R.S.Pura. Wallowing habit, easy dispersion of faeces in water and bulk ingestion of grasses near the water sources (marshy land) increase the risk of Paramphistomiasis due to availability of snail intermediate hosts (Radostitis *et al.*, 1994). FAO (1994) recommended strategic dosing against fluke diseases in ruminants in India, however non adoption of strategic deworming schedule in the region could be responsible for high parasitic infection.

The higher helminthic infection in rainy season as observed in the present study may be due to increased concentration and/or contamination of the grazing area by the infective larval stages of the parasites and thus increasing chance of contact between host and larvae. Higher parasitic burden in the host and on pasture during rainy season was also recorded by Sanyal (1998) and Aggarwal *et al.* (2002).

Climatic factors also influence the rate of larval movement (Ogbourne, 1972; Croll, 1975). With decrease in temperature, relative humidity and rainfall during winter season, there was a pronounced decrease in helminthic infection. The decrease could be attributed to temporary arrest of larval development for hypobiosis due to adverse climate (Hutchinson *et al.*, 1972). The short photo period during winter season indirectly reducing the grazing period of animals, thus lowering the chances of helminthic infection.

Among the helminthic infections, the higher prevalence of nematodes (15.7%) could be correlated with the grazing habits of animals. Maximum prevalence of gastrointestinal nematodes (20.5%) during the rainy season was recorded and similar findings had been reported by Singh (1991) for Punjab region, Gupta *et al.* (1987) 1888. and Garg *et al.* (2003) for adjoining regions.

The difference in the prevalence of helminthes may be due to increased population of

**Table 1: Prevalence of gastrointestinal helminthic infestation in cattle, buffaloes, goat and sheep of Jalpaiguri District, West**

Season	Animals	No of sample examined	Trematodes			Nematodes			Total			Oocyst of Eimeria			
			A	B	C	D	E	F	G	H	I		J		
Summer	Cattle (Adult)	668	202	3	17	222	14	3	16	33	10	-	76	9	
	Calf	246	13	-	2	15	22	1	4	14	3	-	44	4	
	Buffalo	47	2	-	-	2	1	1	-	-	1	-	3	-	
	Goat/Sheep	89	-	-	-	0	-	-	-	-	-	-	12	-	
	Total	1050	217	3	19	239	37	5	21	47	14	2	9	135	13
Rainy	Percent (%)		20.7%	0.3%	1.8%	22.8%	3.5%	0.5	2.0%	4.5%	1.3%	0.2%	0.9%	12.9%	1.2%
	Cattle (Adult)	845	345	9	68	422	31	11	32	68	23	-	166	13	
	Calf	302	25	-	3	28	38	2	11	23	7	-	81	5	
	Buffalo	76	7	2	2	11	1	-	1	1	2	-	5	-	
	Goat/Sheep	92	-	-	-	0	-	2	-	-	-	3	12	17	
Winter	Total	1315	377	11	73	461	70	15	44	92	32	3	13	269	18
	Percent (%)		28.7%	0.8%	5.6%	35.1%	5.3%	1.1%	3.3%	7.0%	2.4%	0.2%	1.0%	20.5%	1.4%
	Cattle (Adult)	389	39	1	6	46	9	2	8	17	3	-	39	7	
	Calf	177	11	-	-	11	18	1	1	7	2	-	29	2	
	Buffalo	51	3	-	-	3	1	-	-	-	-	-	1	-	
Grand Total	Goat/Sheep	74	-	-	-	0	-	-	-	-	-	-	7	-	
	Total	691	53	1	6	60	28	3	9	24	5	0	7	76	9
	Percent (%)		7.7%	0.1%	0.9%	8.7%	4.1%	0.4%	1.3%	3.5%	0.7%	0.0%	1.0%	11.0%	1.3%
	Cattle (Adult)	1902	586	13	91	690	54	16	56	118	36	0	1	281	29
	Calf	725	49	0	5	54	78	4	16	44	12	0	0	154	11
Grand Total	Buffalo	174	12	2	2	16	3	1	1	1	3	0	9	0	
	Goat/Sheep	225	0	0	0	0	0	2	1	0	0	5	28	36	0
	Total	3056	647	15	98	760	135	23	74	163	51	5	29	480	40
	Percent (%)		21.2%	0.5%	3.2%	24.9%	4.4%	0.8%	2.4%	5.3%	1.7%	0.2%	0.9%	15.7%	1.3%

A: *Paramphistomum* sp. B: *Fasciola* sp. C: *Gastrothylax* sp. D: *Ascaris* sp. E: *Bunostomum* sp. F: *Trichuris* sp.  
 G: *Strongyle* sp. H: *Strongyloides* sp. I: *Metastrongylus* sp. J: *Trichostrongyle* sp. K: Oocyst of *Eimeria* sp. L: Cyst of *E. coli*.

specific intermediate hosts in the area. Identification of the factors creating conducive environment for propagation of the intermediate hosts in the area merits further investigation.

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#### REFERENCES

1. Aggarwal, R., Singh, R., Kumar, M. and padhyay, A.K., Epidemiological features of parasitic diseases in some parts of Chhatisgarh state. *Indian J. Vet. Med.*, **22**: 47-49 (2002).
2. Alam, M., Rahaman, A., Sen, M.m. And Sardar, S.A., Subclinical gastrointestinal parasitic infection in buffalo and its effect on hemoglobin. *Livestock Adviser*, **19**: 29-31 (1994).
3. Banerjee, P.S. And Agarwal, M.C., Epizootological studies in bovines of fluke infection with special reference to schistosomiasis. *Indian Vet.J.*, **69**: 215-220 (1992).
4. CHoudhary, S.M.Z., Mondal, M.M.H., Islam, M.J.F.A., Taimur And Biswas, H.R., Prevalence of Fasciolosis in cattle at Savar Dhaka, Bangladesh. *Indian Vet.J.*, **71**: 121-123 (1994)
5. Croll, N.A., Behavioural analysis of nematode movement. *Adv. Parasitol.* **13**: 113 (1975).
6. FAO., Diseases of domestic animals caused by flukes. Food and Agricultural Organization, Rome (1994).
7. Garg, C., Sharma, D.K., Agrawal, R.D. and Raut, P.K., Epidemiology of *Haemonchus contortus* infection in goats in semi-arid region of India. *J. Vet. Parasitol.*, **17**: 56-60 (2003).
8. Gupta R.P., Yadav, C.I. and Choudhri, S.S., Epidemiology of gastrointestinal nematodes of sheep and goats in Haryana. *Indian Vet. J.*, **24**: 117-127 (1987).
9. Gupta R.P., Yadav, C.I. and Rupnath, N.S., Epidemiology of ovine helminthiasis in Haryana, India. *Trop. Anim. Hlth. Prod.*, **20**: 23-29 (1988).
10. Hirani, N.D., Katariya, M.I., Abdullah, Patel, Hasnani, J.J., Kathiria, L.G., Patel, P.V. and Patel, A., Prevalence of gastrointestinal parasitic infection in cattle and buffaloes of Kheda district of Gujarat. *J. Vet. Parasitol.* **13**: 117-119 (1999).
11. Hutchninson, G.W., Lee, ED.H. and Fernando, M.A., Effects of variation in temperature on infective larvae and their relationship to inhibited development of *Obeliscooides cuniculi* in rabbits. *Parasitology* **65**: 333-342 (1972).
12. Jithendran, K.P. and Bhat, T.K., Epidemiology of parasites in dairy animals in North West humid Himalayan region of India with particular reference to gastrointestinal nematodes. *Trop. Anim. Hlth. Prod.* **31**: 205-211 (1999)
13. Krishna, L., Jithendran, K. and Vaid, J., Incidence of common parasitic infection amongst ruminants in Kangra Valley of Himachal Pradesh. *Int. J. Anim. Sc.* **4**: 183-184 (1989).
14. Ogbourne, C.P., Observation on the free-living stages of strongylid nematodes of horse. *Parasitology* **64**: 461-477 (1972).
15. Radostitis, O.M., Blood, D.C. and Gay, C.C., Veterinary Medicine, 8<sup>th</sup> Ed., The English Language Book Society, Bailliere Tindall, London (1994).
16. Raina, A.K., Bhadwal, M.S., Raina, R. and Rashid, Abdul., Epidemiological studies on endoparasitic infection in dairy animals of Jammu. *Life Sci. Reporter.* **1**: 78-79 (1999).
17. Sanyal, P.K., Integrated gastrointestinal parasitic management in dairy animals in Gujarat by self medication. *J. Vet. Parasitol.* **12**: 17-20 (1998).
18. Singh, H., Studies on epidemiology and chemotherapy of strongyle nematodes of sheep in Punjab. M.V.Sc. thesis. Punjab Agricultural University, Ludhiana, India (1991).
19. Singh, R., Sahai, B.N., Ansari, M.Z. and Singh, S.K., Incidence of common helminthic infection in livestock and poultry. *J. Res. Birsa Agri. Uni.* **5**: 93-95 (1993).
20. Soulsby, E.J.L., Helminths, Arthropods and Protozoa of domesticated Animals, 7<sup>th</sup> Ed. Bailliere Tindall, London (1982).