

## Epidemiology of paramphistomiasis in domestic ruminants of Garhwal region of Uttarakhand, India

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### Abstract

Epidemiological studies on the prevalence of paramphistomiasis were undertaken in various villages and at slaughter houses in Garhwal region of Uttarakhand under different climatic conditions in buffaloes, sheep and goat during 2009-11. The maximum prevalence (13.33%) was observed in cattle followed by buffaloes (10.57%), sheep (8.40%) and minimum in goats (7.68%). Overall seasonal prevalence of paramphistomiasis indicated that highest infection was recorded in monsoon and post monsoon (12.91%), followed by summer (11.3%) and least in winter (6.06%).

**Key words:** Epidemiology, paramphistomiasis, ruminants, Uttarakhand.

### Introduction

Paramphistomiasis is one of the most important and widespread parasitic disease of ruminants which causes heavy economic losses. It is a group of disease caused by several species of amphistomes in domestic ruminants of India (Prasad and Verma, 1999). Its occurrence has been reported from different states of India (Hassan *et al.*, 2005; Satyanarayan *et al.*, 2007; Shukla *et al.*, 2012). Keeping in mind the impact of paramphistomiasis on animal health and lack of systematic studies on the epidemiology of paramphistome infection in ruminants of Garhwal region of Uttarakhand, the present study was undertaken to understand the current status of paramphistomiasis in Garhwal region of Uttarakhand in different seasons during a period of two years from 2009-2011.

### Materials and Methods

A total of 6241 faecal samples (1720 cattle, 1400 buffaloes, 1416 sheep and 1705 goats) were collected from different villages of Garhwal region of Uttarakhand from July 2009 to June 2011. These faecal samples were examined for the presence/absence of paramphistome eggs by sedimentation technique (Soulsby 1982.). Fresh amphistomes were also collected from the rumen, reticulum and bile ducts of animals slaughtered at local abattoirs and were transported to laboratory in normal saline.

### Results and Discussion

The maximum prevalence (13.33%) was observed in cattle followed by buffalo (10.57%), sheep (8.40%) and minimum in goats (7.68%). The mean EPG was recorded to be the highest in cattle (2.68) followed by buffalo (2.16) and almost similar in sheep and goats (1.34 and 1.3, respectively) (Table 1). The overall monthly prevalence of paramphistomiasis in all four domestic ruminants (Table 2) indicated that the mean EPG was observed to be highest in August (3.65), July (3.51) and June (2.49) and lowest during December (0.7), November (1.12) and October (1.15). Overall seasonal prevalence of paramphistomiasis in all four domestic ruminants (Table 3) indicated that highest infection was recorded in monsoon and post monsoon (12.91%) followed by summer (11.3%) and least in winter (6.06%). The mean EPG value also followed the similar patterns i.e. maximum during monsoon and post monsoon (2.76) followed by summer (1.85) and minimum during winter (1.1).

The overall prevalence (10.06%) recorded in the present study was slightly higher as compared to 6.35% as reported by Shabih and Juyal (2006) from Punjab and lower than 17.33% as previously reported by Kumar *et al.* (2011) from the hill and tarai areas of Uttarakhand. The results of prevalence are lower but comparable to 13.68 percent (Hassan *et al.*, 2005) from Bareilly District, Uttar Pradesh. These results are also in accordance with those of Kumar *et al.* (2011) with slight variations where higher prevalence of paramphistomiasis in cattle (9.73%) was observed in hills as compared to buffaloes (7.44%). They also -

Table 1: Overall Prevalence of Paramphistomosis in Domestic Ruminants of Garhwal region of Uttarakhand

Host	No. of faecal samples examined	No. of faecal samples positive	% infection	Mean EPG
Cattle	1720	230	13.37	2.68
Buffalo	1400	148	10.57	2.16
Sheep	1416	119	8.40	1.34
Goat	1705	131	7.68	1.3
Overall	6241	628	10.06	1.88

Table 2: Overall Monthly Prevalence of Paramphistomosis in Domestic Ruminants of Garhwal region of Uttarakhand

Month	No. of faecal samples examined	No. of faecal samples positive	% infection	Mean EPG
July	490	79	16.12	3.51
August	535	84	15.7	3.65
September	450	53	11.78	2.72
October	500	39	7.8	1.15
November	475	32	6.74	1.12
December	500	23	4.6	0.71
January	550	32	5.82	1.36
February	555	39	7.03	1.2
March	500	40	8.0	1.14
April	530	49	9.25	1.54
May	536	62	11.57	2.23
June	620	96	15.48	2.49
Total	6241	628	10.06	1.88

Table 3: Overall Seasonal Prevalence of Paramphistomosis in Domestic Ruminants of Garhwal region of Uttarakhand

Season	No. of faecal samples examined	No. of faecal samples positive	% infection	Mean EPG
Monsoon and Post Monsoon	1975	255	12.91	2.76
Winter	2080	126	6.06	1.1
Summer	2186	247	11.3	1.85
Overall	6241	628	10.06	1.88

reported that in tarai area of Uttarakhand, the prevalence was higher in buffaloes (22.24%) than cattle (19.48%).

This slight variation in the prevalence could be attributed to the improved animal husbandry practices, sample size, herd composition, managerial practices, biological potential of snail and host, climate and topography of area. The higher incidence of paramphistome in buffaloes in plain and tarai areas than hill, as compared to cattle might be due to easy dispersion of buffalo faeces in water, wallowing habit of buffalo and ingestion of large number of metacercariae along with bulk ingestion of grasses near

the pond or water bodies as they are let loose for grazing. In hills, cattle are reared as free grazing animals, but the buffaloes are mostly reared stall fed and that is why high prevalence has been recorded in cattle in the present study.

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## References

- Hassan SS, Kaur K, Joshi K and Juyal PO (2005). Epidemiology of paramphistomosis in domestic ruminants in different districts of Punjab and other adjoining areas. *Journal of Veterinary Parasitology*, 19: 43-46.
- Kumar RR, Yadav CL, Garg R and Vatsya S (2011). Incidence of paramphistomosis in cattle and buffaloes of Uttarakhand. *Indian Journal of Animal Sciences*, 4: 374-376.
- Prasad A and Verma TK (1999). On the prevalence and community dominance among paramphistomes infecting domestic ruminants. *Journal of Veterinary Parasitology*, 13: 129-133.
- Satyanarayana A, Babu AP, Kumar KU and Rao HP (2007). A prevalence of paramphistomes in coastal area of Andhra Pradesh. *Indian Veterinary Journal*, 84: 646-647.
- Shabih HS and Juyal PD (2006). Epidemiological observations of Paramphistomosis in ruminants in endemic regions of Punjab and adjoining state (India). *Proceedings of the 11<sup>th</sup> International Symposium on Veterinary Epidemiology and Economics*.
- Shukla N, Singh SK, Sharma MC, Kumar P, Singh R and Singh MP (2012). Prevalance of helminth infection in cattle (indigenous and crossbred) of Agra region of Western Uttar Pradesh. *The Journal of Rural and Agricultural Research*, 12: 71-73.
- Soulsby EJJ (1982). Helminths, Arthropods and Protozoa of Domesticated Animals. 7<sup>th</sup> edn ELBS and Bailliere Tindall, London, Pp.381.