

*Original Research***Prevalence and Intensity of Gastrointestinal Parasites in Buffaloes from Malwa Region of Madhya Pradesh and Coproculture Study of Strongyle Infection****Rakesh Singh Yadav, Vivek Agrawal*, A. K. Jayraw, Nirmal Jamara, G. P. Jatav, Nidhi Singh and Ashok Patil**

Department of Veterinary Parasitology, College of Veterinary Science and Animal Husbandry, Mhow, Madhya Pradesh, INDIA

*Corresponding author: dragrawalin76@gmail.com

Rec. Date:	Jul 02, 2019 12:07
Accept Date:	Aug 17, 2019 14:10
DOI	10.5455/ijlr.20190702120755

Abstract

Twenty faecal samples of buffaloes in an individually labeled polythene bags were collected every month from eight different region of Malwa viz. Indore, Dhar, Jhabua, Dewas, Ujjain, Ratlam, Shajapur and Agar from July 2018 to February 2019 i.e. total 1280 faecal samples. Overall prevalence of gastrointestinal parasites was 35.63%. The highly prevalent gastro-intestinal parasites were strongyle (12.27%) followed in order by *Eimeria* spp. (7.58%), amphistomes (6.95%), *Fasciola* spp. (5.31%), *Toxocara* spp. (4.45%), *Moniezia* spp. (2.27%), *Trichuris* spp. (1.48%) and *Strongyloides* spp. (0.78%). Mean egg per gram \pm S.E. of strongyles (205 \pm 9.83), *Strongyloides* spp. (150 \pm 23.57), *Toxocara* spp (155.93 \pm 9.21), *Trichuris* spp. (190 \pm 22.21) amphistomes (230.10 \pm 19.61), *Fasciola* spp. (226.47 \pm 16.84), *Moniezia* spp. (134.48 \pm 9.14) and *Eimeria* spp. (291.78 \pm 25.36) was recorded. Different genera of strongyle species found in buffaloes in descending order of their prevalence were *Haemonchus* spp. (82.54%), *Trichostrongylus* spp. (8.36%), *Oesophagostomum* spp. (4.26%), *Nematodirus* spp. (2.31%), *Cooperia* spp. (1.43%) and *Ostertagia* spp. (1.10%). The EPG/OPG in most of the fecal samples was in the range of 100-300 and indicated moderate infection that warrants treatment.

Key words: Buffaloes, Coproculture, Intensity, Gastrointestinal Parasites, Prevalence

How to cite: Yadav, R., Agrawal, V., Jayraw, A., Jamara, N., Jatav, G., Choudhary, N., & Patil, A. (2019). Prevalence and Intensity of Gastrointestinal Parasites in Buffaloes from Malwa Region of Madhya Pradesh and Coproculture Study of Strongyle Infection. International Journal of Livestock Research, 9(9), 207-211. doi: 10.5455/ijlr.20190702120755

Introduction

According to Livestock Census, 2012 buffalo population (108.7 million) is 21.23% of total livestock population in India. Moreover, Madhya Pradesh share 7.53% of total buffalo population. Due to subclinical gastrointestinal (G.I.) parasitic infections, animals are not getting desired body weight and poor fertility as well as low milk production leading to unprofitable dairy farming for poor farmers. It is occurring

worldwide and big menace to livestock industry (Sivajothi and Reddy, 2018). The work based on qualitative faecal sample examination alone may not be enough to impart a correct picture on the prevalence of GI parasites as all genera of strongyle are not equally harmful therefore reports on coprological culture has also been extensively reviewed (Singh *et al.*, 1999; Suchita *et al.*, 2010). Moreover, intensity serve as an index of the worm burdens and the counts are used as useful criteria for assessing the nature of the parasitism such as acute/chronic or sub-clinical parasitism. However, scanty information is available on the intensity of gastrointestinal parasites and coproculture study of strongyle infection in buffaloes from Malwa region of Madhya Pradesh. Therefore, the present work was carried out for developing worm management strategies for control of parasitic diseases.

Materials and Methods

The state of Madhya Pradesh is situated between 17° to 25° latitude and 72° to 85° longitude. The Malwa region occupies a plateau in western Madhya Pradesh and south eastern Rajasthan (between 21°10'N 73°45'E and 25°10'N 79°14'E), with Gujarat in the west. The region has comparatively cool evenings against the hot days during the summer season. Even if the day temperature reaches 42 to 43°C, the night temperatures are always in range of 20°C to 22°C making the climate much cooler than the other areas of the region.

Twenty faecal samples were collected every month from eight different region of Malwa *viz.* Indore, Dhar, Jhabua, Dewas, Ujjain, Ratlam, Shajapur and Agar from July, 2018 to February, 2019. A total 1280 faecal samples were collected in individually labeled polythene bag and carried to the laboratory for further study. The faecal samples positive for strongyle eggs from Malwa district were pooled and subjected to coproculture in separate glass tumblers of 300 ml capacity as per the procedure of Roberts and O'Sullivan (1950) to harvest the infective stage larvae (L₃). Identification of larvae was done according to the key and plates given by Keith (1953). The percentage of each strongyle species was determined by identifying at least 50 strongyle larvae harvested from the pooled faecal culture.

Results and Discussion

Out of 1280 buffaloes, 456 were found positive for various gastrointestinal parasites i.e. 35.63% and percentage of various gastrointestinal parasites was in following order *viz.* strongyle (12.27%), *Eimeria* spp. (7.58%), amphistomes (6.95%), *Fasciola* spp. (5.31), *Toxocara* spp. (4.45%), *Moniezia* spp. (2.27%) *Trichuris* spp. (1.48%) and *Strongyloides* spp. (0.78%). The finding of predominant strongyle eggs in buffaloes is in agreement with Bui *et al.* (2009) and Swarnakar *et al.* (2015). Higher prevalence of *Fasciola* spp. (4.44%) and amphistome (11.06%) in buffaloes was reported by Swarnakar *et al.* (2015), while Gupta *et al.* (2012) found 6.77% *F. gigantica* and 45% amphistome in buffaloes, the prevalence of as only one species of cestode occurred in the study write *Moniezia* spp. was in line with the findings of Swarnakar *et*

al. (2015) and Keyyu *et al.* (2006). However, a higher prevalence was reported by Degefu *et al.* (2011) and lower prevalence by Gupta *et al.* (2012). The variation in the prevalence might be due to the opportunity of exposure to the intermediate host and the free-living soil mites on pasture.

Overall Intensity of Gastrointestinal Parasites in Buffaloes

Intensity of the gastrointestinal parasites in buffaloes as EPG/OPG were depicted in Table 1. Intensity serve as an index of the worm burdens and the counts are used as useful criteria for assessing the nature of the parasitism such as acute/chronic or sub-clinical parasitism. Since, mere presence of parasitic eggs in faecal sample of animal is not suggestive of treatment until unless EPG is not known.

Table 1: Intensity of the gastrointestinal parasites in buffaloes as EPG/OPG

Name of Parasites	Egg/cyst per gram of Faeces	
	Range	Mean±SE
Strongyle	100-500	205±9.83
<i>Strongyloides</i> spp.	100-300	150±23.57
<i>Toxocara</i> spp.	100-300	155.93±9.21
<i>Trichuris</i> spp.	100-400	190±22.21
Amphistomes	100-1100	230.10±19.61
<i>Fasciola</i> spp.	100-500	226.47±16.84
<i>Moniezia</i> spp.	100-200	134.48±9.14
<i>Eimeria</i> spp.	100-800	291.78±25.36

It is proved that increase in the EPG count is an indication increase in worm burden of a particular host (Bryan and Kerr, 1989). It also helps in devising management strategies besides assessing the efficacy of control programmes and determining the interval of anthelmintic treatment. The EPG/OPG in most of the fecal samples was in the range of 100-300. The EPG in the most of the studied animals indicates moderate infection that warrants treatment. Different genera of strongyle species (Plate 1, 2, 3 and 4) found in buffaloes and its percent distribution within strongyle group were shown in Table 2.

Table 2: Percent frequency distribution of different genera of strongyles in buffaloes in Malwa region

S. No.	Genera	(%)
1	<i>Haemonchus</i> spp.	82.54
2	<i>Trichostrongylus</i> spp.	8.36
3	<i>Oesophagostomum</i> spp.	4.26
4	<i>Nematodirus</i> spp.	2.31
5	<i>Cooperia</i> spp.	1.43
6	<i>Ostertagia</i> spp.	1.1



Plate 1: Tail end of *Trichostrongylus* spp.

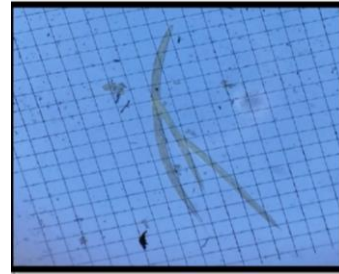


Plate 2: Tail end of *Hemonchus* spp.



Plate 3: Anterior end of *Oesophagos stomum* spp.



Plate 4: Tail end of *Nematodirus* spp.

Yadav *et al.* (2008) and Jamra *et al.* (2014) also reported *Haemonchus* to be the most common genera of strongyle. Climatic and geographic condition of this region supports the propagation and growth of *Haemonchus* larvae. The reason for higher percentage of *Haemonchus* spp. might be due to the fact that *Haemonchus* female has high biotic potential. Highest percentage of *Haemonchus* is matter of concern due to its haematophagus activity.

Conclusion

The prevalence of gastrointestinal parasites in buffaloes was found to be 35.63 % in Malwa region of Madhya Pradesh with the EPG/OPG in most of the fecal samples in the range of 100-300 in most of the studied animals indicate moderate infection that warrants treatment. Among the different parasite strongyle worms were predominant followed by *Eimeria* spp., amphistomes, *Fasciola* spp., *Toxocara* spp., *Moniezia* spp., *Trichuris* spp. and *Strongyloides* spp. The results of the present study point out that the prevalence of GI parasites in buffalo is very common in Madhya Pradesh and it suggests the need to adopt integrated parasite control strategies to control these GI parasitic infections in buffalo in Madhya Pradesh.

Acknowledgement

The authors are thankful to the authorities of Nanaji Deshmukh Veterinary Science university, Jabalpur for providing the facilities to carry out the work.

References

1. Biu, A. A., Maimunatu, A., Salamatu, A. F., & Agbadu, E. T. (2009). A faecal survey of gastrointestinal parasites of ruminants on the University of Maiduguri Research Farm. *International Journal of Biomedical and Healthcare Science*, 5(4), 175-179.
2. Bryan, R. P., & Kerr, J. D. (1989). The relation between the natural worm burden of steers and the faecal egg count differentiated to species. *Veterinary Parasitology*, 30(4), 327-334.
3. Degefu H, Abera C, Yohannes M, Tolosa T. Gastrointestinal helminth infections in small-scale dairy cattle farms of Jimma town, Ethiopia. *Ethiopian Journal Applied Science Technology*, 2(1): 31-37.
4. Gupta, A., Dixit, A. K., Dixit, P., & Mahajan, C. (2012). Prevalence of gastrointestinal parasites in cattle and buffaloes in and around Jabalpur, Madhya Pradesh. *Journal of Veterinary Parasitology*, 26(2), 186-188.
5. Jamra, N., Das, G., Haque, M., & Singh, P. (2014). Prevalence and intensity of strongyles in buffaloes at Nimar region of MP. *International Journal of Agricultural Sciences and Veterinary Medicine*, 2(1), 54-57.
6. Keith, R. K. (1953). The differentiation of the infective larvae of some common nematode parasites of cattle. *Australian Journal of Zoology*, 1(2), 223-235.
7. Keyyu, J. D., Kassuku, A. A., Msalilwa, L. P., Monrad, J., & Kyvsgaard, N. C. (2006). Cross-sectional prevalence of helminth infections in cattle on traditional, small-scale and large-scale dairy farms in Iringa district, Tanzania. *Veterinary research communications*, 30(1), 45-55.
8. Roberts, F. H. S., & O'sullivan, P. J. (1950). Methods for egg counts and larval cultures for strongyles infesting the gastro-intestinal tract of cattle. *Australian Journal of Agricultural Research*, 1(1), 99-102.
9. Singh, R. K., Sisodia, R. S., Shukla, P. C., & Pillay, A. G. R. (1999). A note on incidence of gastrointestinal parasites in sheep and goats in Madhya Pradesh. *Indian Veterinary Medical Journal*, 23, 133.
10. Sivajothi, S., & Reddy, B. (2018). Seasonal Prevalence of Gastrointestinal Parasites of Small Ruminants in YSR Kadapa District of Andhra Pradesh, Indiash, India. *International Journal of Livestock Research*, 8(1), 184-189
11. Suchita, K., Sinha, S. R. P., Sucheta, S., Hoda, M. Z., Mandal, K. G., & Sharma, S. K. (2010). Incidence of gastrointestinal helminthosis in sheep and goats in Patna (Bihar). *Journal of Veterinary Parasitology*, 24(1), 97-99.
12. Swarnakar, G., Bhardawaj, B., Sanger, B., & Roat, K. (2015). Prevalence of gastrointestinal parasites in cow and buffalo of Udaipur district, India. *International Journal of Current Microbiology and Applied Sciences*, 4(6), 897-902.
13. Yadav, C. L., Kumar, R. R., Vatsya, S., Garg, R., & Baneerjee, P. S. (2008). Epidemiological studies on gastrointestinal nematodosis in cattle and buffaloes. *Journal of Veterinary Parasitology*, 22(1), 49-52.