

A STUDY ON PARASITIC PREVALENCE IN NEONATAL BUFFALO CALVES AT AN ORGANIZED HERD IN HARYANA

NEERAJ RANA^{1*}, ANJU MANUJA² and A. SAINI¹

¹Central Institute for Research on Buffaloes, ²National Research Centre on Equines
Sirsa Road, Hisar-125 001

SUMMARY

One hundred and forty two fecal samples were screened to establish the diversity of parasites in neonatal buffalo calves. Samples were examined by specific techniques including morphometry of oocysts and eggs to ascertain the identity of parasites involved. An overall prevalence of 3.52% was found for *Cryptosporidium* spp. with the highest infection during peak winters. Incidence of *Eimeria* spp. infection was the highest during monsoon season with an overall prevalence of 16.10%. Two cases (1.40 %) of *Strongyloides papillosus* were also recorded during the monsoon season.

Key words: *Cryptosporidium* spp., *Eimeria* spp., neonatal buffalo calves, *Strongyloides papillosus*

Parasitism is one of the major afflictions responsible for enormous economic losses in terms of calf mortality in buffaloes.

The present survey was carried out in 142 neonatal buffalo calves of up to one month of age at the Animal Farm of the Institute to elucidate the prevalence of parasitic infections. Faecal samples were directly collected per rectum from calves and were stored at 4-10°C in a refrigerator until examination. Each sample was studied macroscopically and processed both by direct and concentration (saturated salt floatation technique) methods and examined for the presence of helminthic eggs and coccidia oocysts. For specific identification of *Cryptosporidium* oocysts, microscopic slides after air drying of the fecal smears were subjected to Modified Ziehl-Neelsen staining or Kinyoun's acid-fast staining procedure (Dubey *et al.*, 1992). Microscopic examination was followed by morphometry of the oocysts and eggs to establish the specific identity of the parasites involved.

Prevalence of different parasitic oocysts and eggs recovered from fecal samples has been depicted in Table 1. Major enteropathogens identified in neonatal buffalo calves belonged to *Eimeria* spp., *Cryptosporidium* spp. and *Strongyloides papillosus*

with an overall positivity rate of 21.83%.

Zoonotic coccidia protozoan parasite belonging to the genus *Cryptosporidium* is a frequent agent of gastrointestinal infection in humans, domestic animals and other vertebrates. Cryptosporidiosis should not only be considered from the perspective of animal health, but also for its great zoonotic potential. Although the infection leads to few deaths, serious economic losses can occur due to costs involved in the treatment (de Graaf *et al.*, 1999). Apparently, cryptosporidial infection in buffalo calves has not been reported previously in Haryana. Only a few published reports of cryptosporidiosis in animals are available from India (Kumar *et al.*, 2005). The disease was reported for the first time by Dubey *et al.* (1992) followed by Jayabal and Ray (2005) in water buffaloes and cattle from Uttar Pradesh. In recent years, Mallinath *et al.* (2009) in bovines and Rajendran *et al.* (2011) in children and animals have reported *Cryptosporidium* infection from Southern part of India. The calves with *Cryptosporidium* infection in our study were suffering from diarrhoea which is a finding in contrast to that of Rinaldi *et al.* (2007) who rarely observed diarrhoea in *Cryptosporidium* infected animals. Incidence of *Cryptosporidium* spp. infection was high during the month of January with an overall prevalence of 3.52%.

*Corresponding author: nrana@scientist.com

Table 1
Parasitic oocysts/eggs in faecal samples of neonatal buffalo calves

Parasite	Empirical infection score	Size of oocysts/eggs (µm)	Prevalence (%)
<i>Cryptosporidium</i> spp.	+ to ++	4.8 x 5.2	5/142 (3.52)
<i>Eimeria</i> spp.	+ to ++++	12.9-15.48 x 15.48-25.80	24/142 (16.10)
<i>Strongyloides papillosus</i>	++	51.6-54.18 x 33.54-46.44	2/142 (1.40)

Increased calving during this period might have favoured the spread of infection due to overcrowding. This also corroborates with the finding of El-Khodery and Osman (2008) who recorded the highest prevalence of *Cryptosporidium* spp. during winters. The temperature in winters might have been conducive for viability and dissemination of these organisms. The kinetics of fecal shedding/excretion of *Cryptosporidium* spp. was studied over a period of one month. The excretion of oocysts in faeces stopped after three weeks and oocysts could not be recovered from the faeces after one month of calves' age. El-Khodery and Osman (2008) reported the peak prevalence of *Cryptosporidium* in buffalo calves at 1-15 days of age with progressive decrease until two month of age. Singh *et al.* (2006) also regarded *C. parvum* as a potential pathogen for dairy calves, including buffalo calves, up to the age of one month in Punjab.

Incidence of *Eimeria* spp. infection (responsible for causing coccidiosis) was the highest during July to August with an overall prevalence of 16.10%. Infection of *Eimeria* spp. in neonatal buffalo calves (0-3 months) has also been documented earlier (Charan and Pawaiya, 1997; Singh *et al.*, 2008). Higher humidity and temperature during rainy and post-monsoon season might have been the precipitating factors for optimum sporulation of oocysts. Reduced immunotolerance in rainy season might also be responsible for higher incidence of coccidiosis during monsoon season. Our results corroborate with the findings of de Noronha *et al.* (2009) who reported *Eimeria* spp. infection during rainy season in water buffaloes in Brazil. Yadav and Sharma (1986) suggested that inadequate feeding of colostrum, exposure to contaminated environment, underfeeding and poor sanitation are some predisposing factors for higher occurrence of coccidiosis in calves.

Cases of strongyloidosis (*Strongyloides*

papillosus infection) with ovoviviparous eggs were also recorded during the month of July. Recently, Samal *et al.* (2011) reported a case of strongyloidosis in a neonatal buffalo calf. The infection is mainly acquired vertically from dams through transcolostral route. In this study, *Toxocara vitulorum* eggs were not observed which may probably be due to deworming carried out immediately a few days after the birth of calves at the animal farm on routine basis. Periodic establishment of parasitic profile of neonatal calves would pave the way for instituting better managerial measures for their control.

REFERENCES

- Charan, K. and Pawaiya, R.V.S. (1997). Coccidiosis in buffalo calves. *Indian Vet. Med. J.* **21**: 154-156.
- de Graaf, D.C., Vanopdenbosch, E., Ortega-Mora, L.M., Abbassi, H. and Peeters, J.E. (1999). A review of the importance of cryptosporidiosis in farm animals. *Int. J. Parasitol.* **29**: 1269-1287.
- de Noronha, A.C., Starke-Buzetti, W.A. and Duszynski, D.W. (2009). *Eimeria* spp. in Brazilian water buffalo. *J Parasitol.* **95**: 231-234.
- Dubey, J.P., Fayer, R. and Rao, J.R. (1992). Cryptosporidial oocysts in faeces of water buffalo and zebu cattle in India. *J. Vet. Parasitol.* **6**: 55-56.
- El-Khodery, S. and Osman, S.A. (2008). Cryptosporidiosis in buffalo calves (*Bubalus bubalis*): Prevalence and potential risk factors. *Trop. Anim. Hlth. Prod.* **40**: 419-426.
- Jayabal, L. and Ray, D.D. (2005). Cryptosporidial infection in cattle and buffaloes. *J. Vet. Parasitol.* **19**: 165-166.
- Kumar, D., Sreekrishnan, R. and Das, S.S. (2005). Cryptosporidiosis: an emerging disease of zoonotic importance. *Proc. Nat. Acad. Sci. India.* **75**: 160-172.
- Mallinath, R.H.K., Chikkachowdappa, P.G., Gowda, A.K.J. and D'Souza, P.E. (2009). Studies on the prevalence of cryptosporidiosis in bovines in organized dairy farms in and around Bangalore, South India. *Vet. Archiv.* **79**: 461-470.
- Rajendran, P., Ajjampur, S.S.R., Chidambaram, D., Kattula, D., Rajan, D.P., Ward, J. and Kang, G. (2011). Investigation of potential zoonotic transmission of cryptosporidiosis in Southern India. *Am. J. Trop. Med. Hyg.* **85**: 657-659.
- Rinaldi, L., Musella, V., Condoleo, R., Saralli, G., Veneziano, V.,

Bruni, G., Condoleo, R.U. and Cringoli, G. (2007). *Giardia* and *Cryptosporidium* in water buffaloes (*Bubalus bubalis*). *Parasitol. Res.* **100**: 1113-1118.

Samal, A.K., Patra, P. B. and Maharana, B.R. (2011). Simultaneous infestation of a buffalo calf with ascaris and strongyloides: A case study. *Vet. World* **4**: 322-323.

Singh, B.B., Sharma, R., Kumar, H., Banga, H.S., Aulakh, R.S., Gill, J.P.S. and Sharma, J.K. (2006). Prevalence of

Cryptosporidium parvum infection in Punjab (India) and its association with diarrhea in neonatal dairy calves. *Vet. Parasitol.* **140**: 162-165.

Singh, K., Mishra, S.K. and Pruthi, A.K. (2008). Pathology of parasitic infestations in gastrointestinal tract in buffalo calves. *J. Vet. Parasitol.* **22**: 17-20.

Yadav, B.S. and Sharma, D.N. (1986). Morbidity and mortality in buffalo (*Bos bubalis*) calves. *Indian Vet. Med. J.* **10**: 219-223.

The Haryana Veterinarian Journal

(A Scientific Journal devoted to Veterinary Profession)

College of Veterinary Sciences

Lala Lajpat Rai University of Veterinary & Animal Sciences,

Hisar-125 004, India

(Reg. No. HARENG/2001/4789)

AUTHORS' DECLARATION CERTIFICATE

Article entitled _____

Authors _____

1. The article has been seen by all the authors (signatures given below) and are responsible for the technical details and ethical matters of the paper.
2. Due credit of authorship has been given to every scientist who has made a notable contribution to the paper and are satisfied with sequence.
3. The article does not include any name of the scientist who has not made a notable contribution to the paper.
4. The name of the institute appearing below the by-line is that of the institute where the research was conducted and not of the institute where the first author (or the author who has sent the paper) is currently employed.
5. Article has not been published or sent simultaneously for publication to any other journal.
6. The article has not been rejected for publication in any other journal. Rejection elsewhere does not necessarily disqualify the paper for publication in The Haryana Veterinarian but please attach a copy of the reasons given for rejection.
7. No experimental animal has been used during this study without prior permission of relevant authority.
8. Prior clearance/permission for publication due to bio-safety and security angle from Dept. of Animal Husbandry and Dairying, Ministry of Agriculture, Govt. of India has been taken/not required as the data is related/not related with the reporting of exotic agent.

Author's Name & Designation	Present Address	Signature
--	------------------------	------------------