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Prevalence of Gastro-Intestinal Helminths in Buffalo Calves

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Abstract: A total of 200 faecal samples were randomly collected from either sexes of buffalo calves of different age groups. On microscopic examination of the samples, prevalence of helminths in buffalo calves was recorded as 47 %. Out of these, only 18% buffalo calves excreted eggs in their faeces that ranged from 100-400 eggs/g (epg) while 7, 13, 5.5 and 3.5% calves excreted eggs in faeces that ranged from 401-800, 801-1200, 1201-1600, 1601 and above eggs/g, respectively. Further, it was observed that 43 and 4% buffalo calves were positive for nematodes and trematodes, respectively, but mixed infections were observed in 1.5% calves. Cestodes were not detected in any samples examined. Four different species of helminths were identified, the species were: *Toxocara vitulorum* (33%), *Ostertagia ostertagi* (8%), *Trichuris ovis* (2%) and *Fasciola gigantica* (4%). The highest egg counts were recorded in 1-120 days old calves. A slightly higher prevalence (48.30%) of helminths was found in female than in male (45.12%) calves.

Key words: Gastro-intestinal helminths, helminthiasis , buffalo calves

Introduction

Buffalo is an important dairy animal of Pakistan and many other countries of the world. The rearing and breeding of buffalo for milk production is a primary concerned coupled with the secondary concern for draught and meat. The buffalo milk and meat production of the world are 60.33 and 3.08 million metric tones, respectively. Pakistan possesses 21.3 million heads, that is 13.43% of the total world buffalo population. The buffalo milk and meat production of Pakistan are 16.46 and 0.6 millions metric tones that are 27.27 and 19.56% of the total world milk and meat production, respectively (FAO, 2000). Pakistan has the potential to increase buffalo potency by controlling the economic losses due to improper management, diseases and parasitic infection.

Helminthiasis is a well-recognized problem in free-ranging animals. Cattle, buffalos, sheep and goats are usually infected by one or more helminth parasites. The variation in the prevalence of parasitic intensity depends upon the geographical locations, environment, grazing habits, immunological and nutritional status of the host, presence of intermediate host and number of infective larvae or eggs ingested by the animals (Blood and Radostits, 1989). Worm infestation is one of the major constraints in the development of a profitable livestock industry.

Gastro-intestinal helminthiasis syndrome is always caused by a mixture of species of helminth parasites in the alimentary tract (Chaudhry *et al.*, 1984). Effects of helminths on the production are well documented all over the world. The anorexia and reduction in feed intake, loss of blood and plasma proteins in gastro-intestinal tract, alterations in protein metabolism, decrease in levels of minerals, enzymes and diarrhoea, all contribute to loss in weight gain (Soulsby, 1983). Internal parasites adversely affect the health and productivity of animals and also decrease the resistance of animals to various diseases, which may ultimately lead to higher mortality (Irfan, 1984). Keeping in view the immense economic losses due to parasitism, the species of gastro-intestinal helminths and their prevalence in buffalo calves in and around Tandojam were examined in this investigation. The research work aimed at disease control and increment of productivity in order to meet the ever-increasing demand for animal protein source for the diet of the people.

Materials and Methods

Two hundred faecal samples of buffalo calves were randomly collected from Tandojam town and surroundings, during 1999. The calves were divided into three different age groups. In group A, calves were of 1-120 days old, in group B, 121 - 240 days old and in C, 241 - 365 days old . Faecal samples were collected from rectum with the help of disposable plastic gloves and then transferred into wide mouthed screw capped glass bottle that contained 10% formalin as a preservative. The bottles were properly labeled with necessary information about animals (age, sex, locality, etc.) The faecal consistency and colour were recorded and the samples were brought to laboratory for identification and counting of eggs for intensity of infection. Eggs were detected from faecal material using Telemann method and counted by McMaster method as given by Thienpont *et al.* (1979). The eggs of helminths were identified according to the keys given by Thienpont *et al.* (1979) and Soulsby (1983).

Results

Out of 200 collected faecal samples of buffalo calves of different age and sex groups 47% were found infected with different species of gastro-intestinal helminthes, 43 and 4% were positive for nematodes and trematodes, respectively. Mixed infections with nematodes and trematodes were observed in 1.5% faecal samples. However, cestodes were absent in all the faecal samples. The number and percentage of eggs per gram was counted from faecal samples of calves naturally infected with different species of helminths. The infected buffalo calves were grouped on the basis of intensity of infection. Among these, only 18% positive calves shed eggs in their faeces that ranged from 100-400 epg while 7, 13 , 5.5 and 3.5% calves excreted eggs in their faeces that ranged from 401-800, 801-1200, 1201-1600 and >1601 epg, respectively (Table 1). The percentage prevalence of gastro-intestinal helminths in different age groups revealed that the infection was 53.0, 48.0 and 34.0 % in 1-120, 121-240 and 241-365 days old age calves, respectively (Table 2). The highest prevalence of infection was found in group A followed by medium and lowest infections in group B and C, respectively. The percentage prevalence of helminths in different sex groups of buffalo calves was determined on the basis of total number of females (118) and males (82) buffalo calves. The prevalence of helminths was more (48.3%) in females than (45.1%) in males (Fig. 1). The Four species of helminths from faecal samples of buffalo calves were identified as: *Toxocara vitulorum* (33%), *Ostertagia ostertagi* (8%), *Trichuris ovis* (2%) and *Fasciola gigantica* (4%) (Fig. 2). Single species was investigated from 65 (32.5%), 14 (7%), 6 (3%) and 3 (1.5%) faecal samples of different age groups of calves with *Toxocara vitulorum, Ostertagia ostertagi, Trichuris ovis* and *Fasciola gigantica*, respectively. Moreover, mixed infections observed in 3 (1.5%) faecal samples. Infection of *Toxocara vitulorum* with *Trichuris ovis* and *Ostertagia ostertagi* with *Fasciola gigantica in* 1 (0.5%) and 2 (1.0%) faecal samples, respectively.

The mean length (μ) and width (μ) of eggs of various helminthes species were: *Toxocara virtulorum*: 82.1 and 68.3, *Ostertagia ostertagi*: 78.6 and 42.0, *Trichuris ovis*: 76.2 and 37.0 and *Faciola*

Table 1: The percentage of eggs per gram counted from faecal samples of buffalo calves. (n = 200)

Eggs per gram(epg)	No. of positive samples	%
100 – 400	36	18.0
401 – 800	14	7.0
801 – 1200	26	13.0
1201 – 1600	11	5.5
1601 and above	7	3.5

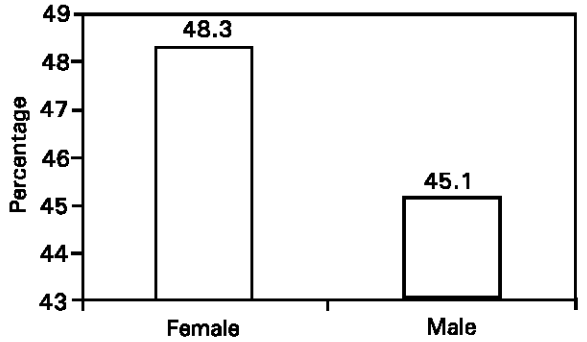

Fig. 1: The percentage prevalence of gastro-intestinal helminths in different sexes of buffalo calves

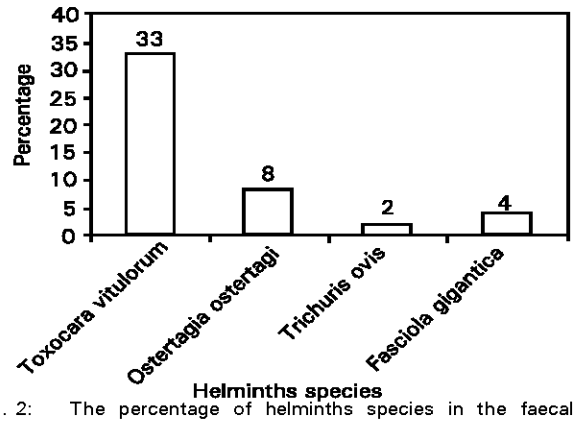

Fig. 2: The percentage of helminths species in the faecal samples of buffalo calves

Table 2: The percentage prevalence of gastro-intestinal helminths in different age groups of buffalo calves

Age groups	No. of samples examined	No. of positive samples	%
A (1-120 days old)	98	52	53.0
B (121-240 days old)	52	25	48.0
C (241-365 days old)	50	17	34.0

gigantica: 165.4 and 95.2, respectively.

Discussion

Several workers have reported the presence of different species of helminths in buffalo calves in Pakistan and other parts of the world. Anwer *et al.* (1996) identified 11 different species of helminths from buffalo calves around Faisalabad, Pakistan. The species were *Strongyloides papillosus, Toxocara vitulorum, Haemonchus contortus, Trichostrongylus* spp., *Ostertagia ostertagi, Oesophagostomum radiatum, Bunostomum phlebotomum, Nematodirus* spp., *Cooperia* spp., *Moniezia benedeni* and *M. expansa*. Chandrawathani and Sani (1993) also reported *Strongyloides papillosus, Haemonchus, Moniezia* and *Toxocara* in faecal samples of calves in Malaysia. However, the results of both the investigation deviate from the findings of this research work as far as the detection of trematode is concerned. The complete absence of the species from the faeces of calves might be due to the age of calves, management and presence of intermediate host in the area.

The overall prevalence of gastro-intestinal helminths recorded in 47% samples, that was lower as against 100% recorded by Barbosa and Corea (1989). The findings of this study do not agree with the results observed by the above workers. However, the percentage prevalence of the helminths in calves observed by Sahoo *et al.* (1991), 71.7 %; Shahid (1993), 61.6 %; Anwer *et al.* (1996), 63.8 % and Ibrahim (1997), 35.2 % are in line with the percentage prevalence detected in this research work. The age of animals is considered to be the major factor in the prevalence of helminth infections. The highest infection was recorded in the group A may be due to *Toxocara vitulorum* as it always occurs within high output in the early months of life. Pradhan *et al.* (1991) also reported that the *Toxocara vitulorum* is the most common parasite of 1-60 days old calves. Earlier, Solusby (1983) and Urquhart *et al.* (1988) also documented higher prevalence in youngest calves and related its occurrence to parental infection or with the transfer of 3rd larvae in colostrums, milk and post-natal infection due to poor hygienic conditions. The findings of the this study regarding detection of *Toxocara vitulorum* eggs are in complete agreement to the findings of Agyei (1991) who detected eggs of *Toxocara vitulorum* in 2 days old calves.

A slightly higher prevalence of helminths was observed in females than males, as 48.30 and 45.12%, respectively. These findings are not in agreement with Ibrahim (1997), who reported the higher prevalence in male followed by female. This might be due to the variation in the sampling area or the number of samples studied, otherwise the trend was similar to the above workers. The egg count per gram of faeces was considered to be the estimation of the intensity of infection of helminths in buffalo calves. During this work only 18.0 % faecal samples showed the egg count that ranged from 100-400 epg, while 401-800, 801-1200, 1201-1600 and >1601 epg were counted in 7.0, 13.0, 5.5 and 3.5 % samples, respectively. Johal *et al.* (1995) counted eggs/g in faeces that was ranging from 15,000 -18,000 in 11 calves out of 245 calves examined. Solusby (1983) suggested that the presence of 300-600 epg of nematodes and 100-200 epg of trematodes in cattle and buffaloes can cause infection. The identification of eggs made on the size and morphology of the eggs. They fall in the range and morphological explanation given by Theinpont *et al.* (1979), Solusby (1983) and Coles (1986). The research envisaged that a moderate helminths infection is prevailing in buffalo calves in Tandojam and its surroundings and the prevalence of helminths was higher in 0-120 days old calves. Thus it is suggested that young calves should be brought on deworming schedule as soon as they attained the age required for deworming.

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