GASTROINTESTINAL PARASITES OF BUFFALOES FROM UDGIR AREA OF MARATHWADA: A COPROLOGICAL APPRAISAL

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ABSTRACT

In a round the year coprological prevalence survey of gastrointestinal parasitic infections in domestic buffaloes of Udgir area carried out from August 2015 to July 2016, a prevalence to the tune of 12.42% was noted. An overall prevalence of gastrointestinal parasites was recorded as *Strongyles* sp. 7.78%, *Strongyloides* sp. 1.61%, *Trichuris* sp. 1.04%, *Moniezia expansa* 0.69%, *Eimeria* sp. 0.42%, mixed infection 0.92% and *Toxocara* sp. 0.34%. Seasonal pattern of prevalence showed highest infection in monsoon followed by in winter and lest during summer. Age-wise analysis of gastrointestinal parasitic infections showed various trends of infection. In the early age Group 1 (calves of below 6 months age) showed the highest infection of 32.5%, the young-adults age Group 2 (6 to 18 months) shows moderate infection of 17.96% while lowest infection occurred in adult was 7.59%. Sex-wise analysis indicated higher in males than female. Breed-wise analysis conducted for prevalence of gastrointestinal parasitic infection showed significant variation within the breeds of buffalo. Highest infection seen in Murrah i.e. 20.7% followed by Marathwadi (15.81%) and Non-descript (9.24%) breed of buffaloes.

Keywords: *Bubalus bubalis*, buffaloes, gastrointestinal, parasites, season, Marathwada

INTRODUCTION

Buffaloes play a most important role as a source of milk, meat, manure and drought power. In India, there is a higher preference to buffaloes than cattle by the majority of small and marginal farmers for their livelihood as an insurance against the risk of crop failure due to natural calamities such as draught which is quiet frequent in certain parts of this country. India constitutes about 55.7% (98.7 million) of the total world buffalo population (FAO, 2008). Still the production performance has been poor. The reasons may be diseases; genetic makeup, poor nutritional and managemental practices, environmental stress *etc*. Among all, parasitic infection caused by helminthes is the major constraints for poor performance of livestock.

The gastrointestinal tract (GIT) of animals harbor wide variety of parasites like helminthes, coccidia *etc*. which cause clinical and sub clinical parasitism. Gastrointestinal parasites not only affect the health but also affect the productive and reproductive performance of the animals which

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includes loss in body weight, poor reproductive performance, digestive disturbance, emaciation for longer period and increased susceptibility of animals to other infections (Radostits *et al*., 1994; Yadav *et al*., 2004). Similarly, the economic impact of gastrointestinal helminthes encompasses mortality and morbidity, losses (measured in terms of decreased production of meat, milk and wool etc.), enhanced susceptibility to diseases, losses resulting from condemnation of carcasses and organs as well as cost of drugs and veterinary aids. In spite of significant production losses, the problem is neglected due to its chronic and insidious nature. Therefore, the information on prevalence of gastrointestinal helminthes is always considered mandatory for evolving effective strategies for their management.

Prevalence of gastrointestinal parasite infection in livestock varies according to the age sex breed of the animal, existing climatic conditions such as temperature, rainfall etc., managemental practices (Kumar *et al*., 2016; Kumar *et al*., 2008). Therefore it is needed to estimate the possible variation in parasitic infection of each host species of animals in different geographic regions and which could help to design an effective control measures against economically important parasitic diseases. The present research work was planned with an objective to record the clinical and subclinical Gastrointestinal parasitic profile in buffaloes from Udgir region, a different type in ecological set up of Maharashtra state.

MATERIALS AND METHODS

Faecal samples were collected throughout year during August 2015 to July 2016 comprising of all three seasons of the year from the TVCC of college, adopted villages, clinical camps and nearby Udgir area. These samples were processed in the laboratory by standard methods Flotation and Sedimentation techniques (Soulsby, 1982). Samples were examined under low and high power microscopic fields for presence of round worm eggs, tape worm proglottids, eggs of fluke and oocysts of enteroprotozoan. The eggs/oocysts so detected were further examined for morphology to know the specification of fluke eggs, tape worm, round worm and entero-protozoa.

RESULTS AND DISCUSSION

Out of 861 faecal samples examined, the prevalence of 12.42% was observed throughout the year. In buffaloes (Table 1), faecal examination revealed the overall gastrointestinal parasitic infection to the tune of 12.42%. *Toxocara* sp. with 0.34% , *Trichuris* sp. with 1.04%, *Strongyloides* sp. with 1.61%, *Strongyles* sp. with 7.78%, *Emeria* sp. with 0.46%, *M. expansa* with 0.69% and mixed infections with 0.92% prevalence in buffalo. Out of the total Strongyle infections most predominant parasite was *Trichostrongylus* sp. (70.7%) followed by *Bunostomum* sp. (9.3%), *Mecistocirrus* sp. (8.3%), *Haemonchus* sp. (6.5%) and *Cooperia* sp. (5.2%).

As regards to seasons, prevalence of gastrointestinal parasitic infection (Table 2) recorded was highest in monsoon (22.22%) followed by winter (10.84%) and least during summer (8.42%). This observation recorded in the present study is on the lines of observations recorded by Sreedevi and Hafeez (2014); Patel *et al*., (2015), who have also noted highest prevalence of gastrointestinal parasites in buffaloes in monsoon followed by winter and summer. According to

Soulsby (1996), higher rainfall during monsoon season provides suitable molarity of salt which is important factor for ecdysis. It also helps in larval dispersion on pasture and increases the chances of contact between host and infective larvae. Stability of monsoon season for survival, development and dissemination of parasitic larvae and suitable environment for sporulation of *Eimeria* spp. oocysts. Whereas, devoid of optimum moisture and temperature for development of larvae in pasture during winter and summer might be the reason for lower infection.

Age wise status of gastrointestinal parasitism in buffaloes (Table 3) depicted more prevalence in buffalo calves, followed by young and adults. Percent infection noted was 32.45%, 17.96% and 7.59% percent infections in buffalo calves (age Group I), young (age Group II) and adult (age Group III) respectively. Statistically highly significant differences were noted amongst three age groups in regards to overall gastrointestinal parasitic infections. *Toxocara vitulorum*, and *Moniezia expansa* sp. infection was highest in the buffalo calves (age Group I). *Strongyles* group, *Strongyloides* sp, *Trichuris* sp., *Eimeria* sp. and mixed infections showed more or less negligible difference between buffalo calves (age Group I) and young adult (age Group II). Whereas, per cent infection in adults (age Group III) of *Strongyles* group, *Strongyloides* sp., *Trichuris* sp., *Eimeria* sp. and mixed infection was very low compared to other two age groups. Mixed infections were found very high in buffalo calves (age Group I) and young adults (age Group II) in comparison to adults. In buffalo the prevalence of gastrointestinal parasitic infections noted was 32.45%, 17.96% and 7.59% in buffalo calves (age Group I), young adult (age Group II) and adult (age Group III) respectively. Similar observations were reported by Raza *et al.* (2012); Patel *et al.* (2015).

Mahamune *et al.* (2011) reported higher parasitic infection in young buffaloes followed by buffalo calves and adults. They attributed it to less access of contaminated pasture by calf than young and in adults acquiring of immunity to parasites due to continuous exposure to parasites throughout year.

Notable difference was recorded for prevalence of parasitic infections between males and females (Table 4). Percent parasitic infection recorded was 18.05% in males and 11.91% in females. Statistically no significant difference was noted between both the sexes. Strongyle group nematodes were noted higher in females with 7.98% in comparison to that of male with 5.5%. Rest of the parasitic species (*Toxocara* sp., *Strongyles* sp., *Strongyloides* sp., *Trichuris* sp., *Moniezia expansa* and *Eimeria* sp.) and mixed infections were found slightly more in he buffaloes as compared to she buffaloes.

In regards to buffaloes there exists non-significant differences between two sexes, however, male buffaloes showed comparative higher prevalence (18.05%) than the females (11.91%). Almost all Individual parasitic species infection showed higher percent prevalence more in males than the females. The present results are in agreement with the results reported by Mamun *et al.* (2011); Raza *et al.* (2016). The higher prevalence of worm infection in buffalo male calves might be due to neglected attitude of the farmers towards the management of buffalo male calves and preference attitude for female raising.

Indigenous breeds *i.e.* Non-descript (ND), Marathwadi and Murrah were studied for noting the prevalence of GI parasitic infections. Percent gastrointestinal parasitic infection recorded were 20.68% in Murrah, 16.58% in Marathwadi and

Table 1. Species wise prevalence of gastrointestinal parasites.

No.	Species	%
1	*Toxocara vitulorum*	0.34
2	*Strongyloides* sp.	1.61
3	*Trichuris* sp.	1.04
4	*Moniezia expansa*	0.69
5	*Eimeria* sp.	0.42
6	Mixed infections	0.92
7	In strongyle group.	7.78
	Trichostrongylus sp.	70.7
	Bunostomum sp.	9.3
	Mecistocirrus sp.	8.3
	Haemonchus sp.	6.5
	Cooperia sp.	5.2
Total prevalence		12.42

Table 2. Season wise prevalence of gastrointestinal parasitic infection in buffaloes.

Season	Summer		Monsoon		Winter		Total	
Parasite	**Positive**	**%**	**Positive**	**%**	**Positive**	**%**	**Positive**	**%**
Toxocara vitulorum	1	0.27	1	0.50	1	0.33	3	0.34
Strongyles	20	5.43	23	11.61	24	8.13	67	7.78
Strongyloides sp.	1	0.27	7	3.53	2	0.67	10	1.61
Trichuris sp.	3	0.81	6	3.03	0	0	9	1.04
Moniezia expansa	3	0.81	2	1.01	1	0.33	6	0.69
Moniezia benedeni	0	0	0	0	0	0	0	0
Eimeria sp.	1	0.27	1	0.50	2	0.67	4	0.42
Mixed infections	3	0.81	4	2.02	1	0.33	8	0.92
Total number of animals examined	368	-	198	-	295	-	861	-
Total positive and percentage	31	8.42*	44	22.22*	32	10.84*	107	12.42

Calculated Chi-square value-20.60; Chi-square table (1%-9.21, 5%-5.99).

*highly significant difference was noted between three seasons.

Table 3. Age wise prevalence of gastrointestinal parasitic infection in buffaloes.

Age group	Age group 1st (0-6 month)		Age group 2nd (6-18 month)		Age group 3rd (above 18 month)		Total	
Parasite	**Positive**	**%**	**Positive**	**%**	**Positive**	**%**	**Positive**	**%**
Toxocara vitulorum	3	2.63	0	0	0	0	3	0.34
Strongyles group	12	10.52	14	10.93	41	6.62	67	7.78
Strongyloides sp.	6	5.26	2	1.56	2	0.32	10	1.16
Trichuris sp.	4	3.50	3	2.34	2	0.32	9	1.04
Moniezia expansa	6	5.26	0	0	0	0	6	0.69
Eimeria sp.	3	2.63	1	0.78	0	0	4	0.46
Mixed infections	3	2.63	3	2.34	2	0.32	8	0.92
Total number of animals examined	114	-	128	-	619	-	861	-
Total positive and %	37	32.5*	23	17.96*	47	7.59*	107	12.42

Chi-square value calculated was 51.62 (1%-9.21, 5%-5.99).

Table 4. Sex wise prevalence.

Sex	Male		Female		Total	
Parasite	**Positive**	**%**	**Positive**	**%**	**Positive**	**%**
Toxocara vitulorum	1	1.38	2	0.25	3	0.34
Strongyles sp.	4	5.5	63	7.98	67	7.78
Strongyloides sp.	2	2.77	8	1.01	10	1.16
Trichuris sp.	1	1.38	8	1.01	9	1.04
Moniezia expansa	2	2.77	4	0.5	6	0.69
Eimeria sp.	1	1.38	3	0.38	4	0.46
Mixed infections	2	2.77	6	0.76	8	0.92
Total number of animals examined	72	-	789	-	861	-
Total positive and percentage	13	18.1	94	11.91	107	12.4

Chi-square value calculated was 2.00 (1%-6.63, 5%-3.84).

Table 5. Breed wise prevalence of gastrointestinal parasites in buffaloes.

Breed	Non-descript		Marathwadi		Murrah		Total	
Parasite	Positive	%	Positive	%	Positive	%	Positive	%
Toxocara vitulorum	0	0	2	0.93	1	0.86	3	0.34
Strongyles group	37	6.98	18	8.37	12	10.34	67	7.78
Strongyloides sp.	4	0.75	3	1.39	3	2.58	10	1.61
Trichuris sp.	3	0.56	4	1.86	2	1.72	9	1.04
Moniezia expansa	1	0.18	2	0.93	3	2.58	6	0.69
Eimeria sp.	1	0.18	2	0.93	1	0.86	4	0.46
Mixed infections	3	0.56	3	1.39	2	1.72	8	0.92
Total number of animals examined	530	-	215	-	116	-	861	-
Total positive and percentage	49	9.24	34	15.81	24	20.7	107	12.42

Chi-square value calculated was 12.66 (1%-9.21, 5%-5.99).

9.24 in Nondescript breeds of buffaloes (Table 5). Statistically, there was significant difference noted amongst breeds. *Toxocara* sp. noted only in Non-descript (ND) and Murrah with little variation *i.e.* 0.97% and 0.86%, respectively. *Strongyles* group nematodes were most prevalent among all breeds with per cent infection of 6.98% in Non-descript (ND), 8.78% in Marathwadi and 10.34% in Murrah. Percent parasitic infection of *Strongyloides* sp., *Trichuris* sp., *Eimeria* sp. and mixed infections showed little variation amongst different breeds.

The results of this study reveal that there is a considerable extent of prevalence of gastrointestinal parasitism which should be monitored through timely deworming with appropriate drugs. Keeping this in view a strategic deworming and treatment protocols may be formulated to keep the buffaloes health in state sound and production in profit.

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