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Research Article

A Study on faecal egg count of different helminth parasites of buffaloes, Gujarat, India

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Abstract

On based of this study, different helminth parasites in buffaloes was found to be *Fasciola spp.*, *Amphistome spp.*, Mix infection of *Fasciola spp.* & *Amphistome spp.*, *Moniezia expansa, Moniezia benedeni, Toxocara vitulorum, Strongyle group* on screening of 150 faecal samples. On class wise analysis it was revealed that 64 % cases are of trematodes, followed by nematodes and cestodes with 26% and 10% infection, respectively. Highest egg per gram (EPG) was to be found in *Fasciola spp.* infection in buffaloes and least EPG was found in *Strongyl spp.* infection. Mean EPG for all helminth parasites was found to be 140.60±98.9. Highest EPG was found in monsoon followed by winter and summer.

Introduction

India is an agriculture based country and livestock sector is a major part of it. Livestock sector plays a major role in Indian economy, which is about 5.36 per cent of total GDP and 26.62 per cent of agricultural GDP (Anonymous, 2008-09). The livestock sector in India is experiencing fast growth since last decade. Livestock resources have to be utilized optimally, to achieve the targets of providing wholesome, healthy and nutritional food to huge population of our country. .Buffaloes are the important multipurpose farm animals in the Indian sub-continent, contributing significantly to meat and milk production. According to the latest FAO statistics (2008), world buffalo population is estimated at 185.29 million, spread in some 42 countries, of which 179.75 million (97%) are in Asia. India has 105.1 million and they comprise approximately 56.7 per cent of the total world buffalo population. Because of their habitats, they suffer from a wide variety of parasitic diseases. These all parasitic burden in buffaloes cause heavy loss in milk production and meat production. The main purpose of this study is to know the burden of different helminth parasites in buffaloes by counting their eggs in faecal samples of buffaloes.

Materials and Methods

Study area and sample collection

The present study was carried out to know burden of helminth parasites in buffaloes by counting their ova in faecal samples of buffaloes and for that a total of 150 faecal samples are collected from Anand district of Gujarat, India. All samples were collected in air tight container, properly labeled and 10% formalin was added to the each sample to prevent further contamination.

Processing of collected samples

Processing of faecal samples

Faecal samples were processed by qualitative examination viz; sedimentation technique for the identification of the ova in the laboratory. After identification of the ova counting of EPG was done by using Mc Master slide technique as described by Soulsby (2012).

Results and Discussion

Egg counting was performed as per routine and widely used method and result was expressed as EPG (Egg Per Gram of faecal sample). We had expressed our results in range in order to minimize the error. It was found that the range of EPG varies from species to species. EPG count was the highest in case of *Fasciola* spp. infection (100-1400). In cases of mix infection of *Fasciola spp. and Amphistome spp.* this count was reported around 100 to 1300. *Amphistome spp.* has 100-500 EPG count. *Moniezia expansa* and *Moniezia benedeni* has similar EPG count i.e 100 to 400. *Toxocara vitulorum* has 100 to 200 and *strongyle* group had showed 100 eggs per gram of sample. On calculating mean EPG count, it was found that *Fasciola* spp. (266.88±144.18) has highest count followed by *Amphistome spp.* (233.58±143.56), mix infection of *Fasciola spp. and Amphistome spp.* (206.65±167.56), *Moniezia benedeni* (143.67±102.78), *Moniezia expansa* (122.35±97.67) and *Toxocara vitulorum* (88.87±43.44). A least parasitic burden was found in case of *strongyle group* (67.56±23.45). Species and season wise faecal egg count is given in table-1 and table-2, respectively.

Table-1: Species wise faecal egg count of helminths of buffaloes

Name of parasites	Egg per gram of faecal (EPG)	
	Range	**Mean ±SD**
Fasciola spp.	100-1400	266.88±144.18
Mix infection of *Fasciola spp.* & *Amphistome spp.*	100-1300	206.65±167.56
Amphistome spp.	100-500	233.58±143.56
Moniezia expansa	100-400	122.35±97.67
Moniezia benedeni	100-400	143.67±102.78
Toxocara vitulorum	100-200	88.87±43.44
Strongyle group	100	67.56±23.45
Total	**100-1400**	**140.60±98.9**

Table-2: Season wise data for faecal egg count (EPG) of helminths of buffaloes:

Season	Name of Parasite	Egg per gram of Faecal (EPG)	
		Range	**Mean ±SD**
Summer (March to June)	*Fasciola spp.*	100-200	167.56±25.18
	Mix infection of *Fasciola spp.* & *Amphistome spp.*	100-200	140.65±55.67
	Amphistome spp.	100-400	132.58±143.56
	Moniezia expansa	100-500	128.35±97.67
	Moniezia benedeni	100-500	115.67±102.78
	Toxocara vitulorum	100-200	85.87±46.47
	Strongyle group	100	67.56±23.45
	Sub total	**100-500**	**117.53±65.38**
Monsoon (July to October)	*Fasciola spp.*	100-1200	206.88±144.18
	Mix infection of *Fasciola spp.* & *Amphistome spp.*	100-1200	180.65±167.56
	Amphistome spp.	100-500	197.58±143.56
	Moniezia expansa	100-800	187.35±145.67
	Moniezia benedeni	100-800	189.67±102.78
	Toxocara vitulorum	100-200	78.87±43.44
	Strongyle group	100	68.56±23.45
	Sub total	**100-1200**	**154.01±104.23**
Winter (November to February)	*Fasciola spp.*	100-1200	269.88±144.18
	Mix infection of *Fasciola spp.* & *Amphistome spp.*	100-1200	198.65±167.56
	Amphistome spp.	100-500	187.58±143.56
	Moniezia expansa	100-800	165.35±97.67
	Moniezia benedeni	100-800	130.67±102.78
	Toxocara vitulorum	100-200	75.87±43.44
	Strongyle group	100	63.56±23.45
	Sub total	**100-1200**	**151.78±98.90**

These mean EPG counts are in parallel to the data published by Mamun *et al.,* (2011). They found EPG count in the range of 100-5000, which is slightly higher than our findings except for few helminths where it's very close to our findings. In other study conducted by Wadhwa *et al.,* in 2011, reported high EPG of *Strongyles* species that is 200-1400 with an average of 684.61+350.82 on analysis of total 200 faecal samples; comprising 100 samples each of cattle and buffalo, which might be due to poor management, irregular deworming, prevalence of intermediate host and various environment factors like humidity, rain fall as well as climate changes due to global worming. Low number of EPG in the present study is indirectly indicating that there is significant improvement in management and adaptation of regular deworming programme in study area. Alim *et al.,* (2005) reported EPG in the range of 153.24± to 159.67±6.80 which is very low comparing to present study. It may be because of better managemental condition or less water irrigated areas. Jamra *et al.*, (2014) noticed highest intensity of EPG of *Strongyl spp*. infection in month of November (422.73±49.71) and lowest in January (127.27±24.65) which is little contrast to the present finding. It may be because of extended rainfall in the area of research work.

Conclusion

In general on screening of 150 samples, it was noticed that gastro-intestinal helminths are prevalent at the rate of 64.67% in buffaloes. Faecal egg count revealed that the egg counts for all observed species were ranged in between 100 to 1400; with maximum count for *Fasciola spp.* and lowest for *Strongyle* group. Highest EPG was recorded in monsoon and least in summer season.

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