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Research Article

Gastro Intestinal Helminths Parasites of Local Chickens Samples from Tribal Areas of Madhya Pradesh

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ABSTRACT

Chicken providing employment and income for small-scale farmers particularly in the off cropping season, poultry integrates very well into other farming activities like cropping. Chickens die each year as a result of various infections. Prevalence of gastrointestinal parasites is still very rampant. The domestic chicken feeds on a wide range of food substances. This ranged from grains, fruits to insects which may harbour infective stages of parasites thereby predisposing them to parasites infection.

Two hundred (200) gastrointestinal tracts of local and exotic breeds of chickens local retail outlets collected from the tribal areas Including Seoni, Chhindwara, Dindori, Mandla, Jabalpur, of (M.P.). Samples were collected from retail chicken shops and examined for helminthes parasites.Formol-ether concentration technique was used to concentrate the gut content and analysis carried out. Six different gastrointestinal parasites were isolated and identified. Of these parasites, *Ascaris galli* was found to be the most prevalent (51.60%) among the chickens. Other parasites encountered included; *Railleitina echinobothrida* (21.60%), *R. tretragona* (22.0%), *Hymenolepsis carioca* (23.00%), *Hetarakis gallinarum* (31.00%) and *Syngamus trachea* (1.50%).Prevalence rate of infection between the local and exotic breeds of chickens. Parasite preference in respect to sex was also recorded. Females harbored more parasites than males. The significance and socio-economic implications of these parasites are also highlighted.

KEYWORDS

Gastrointestinal, Helminth, Societies, Parasites, Chicken

INTRODUCTION

The chicken, *Gallus gallus* is believed to have descended from the wild Indian and South East Asian red jungle fowl (Permin and Ranvig, 2001). The bird provides man with high nutritional value and other socio-economic benefits which cannot be overemphasized (Matur, 2002). Besides providing employment and income for small-scale farmers particularly in the off cropping season, poultry integrates very well into other farming activities like cropping and fish farming (Aini, *et al.*, 1990).A lot of losses in poultry have been linked to disease causing agents such as viruses, bacteria and parasites. It has been estimated that more than 750 million chickens, guinea fowls and ducklings dies in India each year as a result of various infections. Although, somewhat reduction in birds parasitic infection has been achieved in commercial production system mostly due to improved housing, hygiene and management practices the prevalence of gastrointestinal parasites is still very rampant (Pandey,*et al.*, 1992).

The domestic chicken feeds on a wide range of food substances. This ranged from grains, fruits to insects which may harbour infective stages of parasites thereby predisposing them to parasites infection particularly gastro-intestinal parasites (Oniye, *et al.,*2001; Frantovo, 2000). Helminth parasites of chickens are prevalent in many parts of the world (Hodasi1969). In India, documented evidences abound from India.

Helminth parasites of poultry are commonly divided into three main groups; nematodes, cestodes and trematodes. Nematodes constitute the most important group of helminth parasites of poultry both in number of species and the extent of damage they cause the main genera include *Capillaria, Heterakis*, and *Ascaridia* (Jordan and Pattison, 1996). *Ascaris galli* has been incriminated as the most common and most important parasite of poultry (Hodasi, 1969; Pam, *et al.*,2006; Luka and Ndams, 2007). The cestodes of significant importance are of the two genera *Railleitina* and *Hymenolepsis* (Oniye *et al*., 2001; Luka and Ndams, 2007). These trematode infections are not very common in domestic chickens as has been the only species reported from the forest belt of Ana (Hodasi, 1969). The similar observations were made by Nadakal et al., 1972 who reported highest prevalence rate of cestodes followed nematodes and trematodes in desi birds.

Study Area: The Seoni, Dindori,Chhindwara and Mandla, Rural area of Jabalpur is located geographically at the centre of Madhya Pradesh.

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Area	Local Breed	Exotic Breed	Total
Seoni	18	15	33
Dindori	22	23	45
Chhindwara	16	22	38
Mandla	24	17	41
Jabalpur	20	23	43
Total	100	100	200

Examination Procedure: The alimentary canal of each chicken was opened from the esophagus down to the rectum (Fatihu *et al.*, 1991) and all worms visible to the naked eye were collected using a pair of forceps. Recovered nematodes were preserved in 70% alcohol while cestodes were fixed with acetic formalin alcohol, stained with haematoxylin and mounted in Canada balsam (Belghyti et *al*., 1994; Oniye *et al*., 2001). Scrapings from the intestinal mucosa from the upper, middle and lower linings of the intestine and caecum were concentrated using the formol-ether concentration technique (Cheesbrough, 1998).

Identification:

All adult worms were identified directly under the microscope. The identification keys of Soulsby (1982) and Khalil, *et al*., (1994) were adopted.

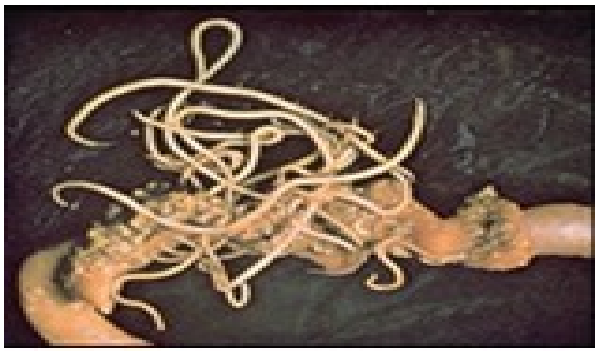

Fig. 1: Nematodes round worms

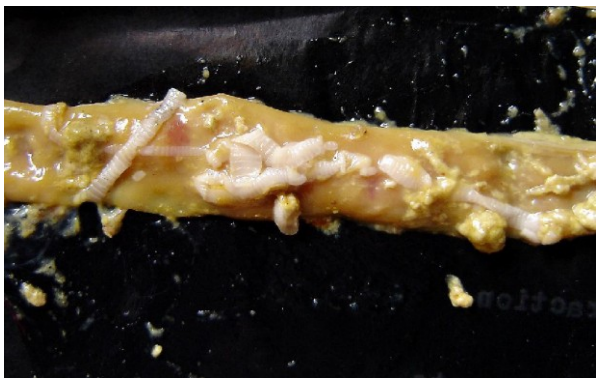

Fig.1. Tapeworm embeded on the intestinal mucosa

Fig.2. Intestinal Contents showing Nematode and Cestode parasite.

RESULTS

Table 1: Incidence of Gastro-Intestinal Helminth Parasites of Chicken

Parasites	No infected (n=200)	Prevalence %
A. galli	103	51.5
R. tetragona	44	22.0
H. gallinarum	62	31.0
S. trachea	3	1.5
H. carioca	46	23
R. echinobothrida	39	19.5

Table 2: Prevalence of gastro-intestinal parasites in relation to sex and breed

Parasites	Local breeds (n=100)	Exotic reeds (n= 100)	Prevalence %		
	Male	Female	Male	Female	
A. galli	83(16.6)	71(14.2)	55 (11)	49 (9.3)	51.6
R.echinobothridia	21(4.2)	25(5.0)	9(1.8)	43(8.6)	19.6
R. tetragona	34(6.8)	35(7.0)	20(4.0)	22(4.4)	22.2
H. gallinarum	48(9.6)	57(11.4)	19(3.8)	31(6.2)	31
S. trachea	7(4.1)	2 (0.4)	---	--	1.8
H. Carioca	30(6.0)	38(7.6)	22(4.4)	25(50)	23.0

Two hundred gastrointestinal tracts comprising of 100 local and 100 exotic breeds of poultry birds *(Gallus gallus)* were collected from slaughter houses in market and screened for gastro-intestinal parasites. A total of six different species of intestinal parasites were isolated and identified. The result revealed that *A. galli H.gallinarum and H. carioca* had the highest prevalence rate of infection in both the local and exotic breeds. The percentage prevalence recorded was 51.5%, 31.0% and 22.0% respectively. Parasites preference in relation to sex was also observed. *A. galli* was more prevalent in male chickens while *H. gallinarum and H. carioca* had high preference for female birds (11.4% and 7.6%; 6.2% and3.8% in the local and exotic breeds) than the male (9.6% and 3.8%; 6.0% and 4.4%) chickens respectively. *S. trachea* happened to be isolated only from the local breed with more infections observed in males (1.4%) than females (0.4%). The total prevalence rate of infection was 1.5%. *R. echinobothrida and R. tetragona* were recovered from both local and exotic breeds with a percentage prevalence of 19.0% and 22.2% respectively. They also showed some degree of preference as regards to sex, with more infection rates observed in females birds than in the males.

The overall prevalence of infection in local breed (90.2%) was significantly higher, than the exotic breed (53.0%). This is not uncommon because of their free range mode of management practice which allows them free access to virtually all types of environment and hence, predisposing them to various forms of infections.

DISCUSSION

The survey of the gastrointestinal helminthes of chickens slaughtered in tribal area including (Mandla, Dindori, Chhindwara, Seoni, Jabalpur) of the Madhya Pradesh. Six species of helminth parasites were encountered in this study: *Ascaris galli* had the highest prevalence rate in both local and exotic breed. This species had been reported in several studies as the commonest and most important helminth infection of poultry (Jordan and Pattison, 1996). Similar reports have been documented from other parts of India; Puttalakshmamma, *et al* (2008), Sonune (2012); Murthy andRao (2012). These reports incriminated the nematodes and the Cestode as very important parasites of birdsHodasi,1969; Pam, *et al*., 2006; Luka and Ndams, 2007). *Syngamus trachea* that was absent in the exotic breed had low prevalence rate in local breed(1.8%) this is in agreement with Pam, *et al*.,(2006); Luka and Nams, (2007) who reported in their work that this parasite has low prevalence rate of infection compared to the other helminth parasites. Other species that recorded significant level of infection include *Ralienthina echinobothrida* (12.6%), *R. tetragona* (22.2%), *Hetarakis gallinarum* (31.0%) and *Hymenolepsis carioca* (23.0%).

Parasites preference in relation to sex was also observed. *A. galli* was more prevalent in male chickens while *H. gallinarum and H. carioca* had high preference for female birds (11.4% and 7.6%; 6.2% and 3.8% in the local and exotic breeds) than the male (9.6% and 3.8%; 6.0% and 4.4%) chickens respectively. *S. trachea* happened to be isolated only from the local breed with more infections observed in males (1.4%) than females (0.4%). The total prevalence rate of infection was 1.8%. *R. echinobothrida and R. tetragona* were recovered from both local and exotic breeds with a percentage prevalence of 19.0% and 22.2% respectively. They also showed some degree of preference as regards to sex, with more infection rates observed in females birds than in the males.

The overall prevalence of infection in local breed (90.2%) was significantly higher ($x2=6.635$, $df=1$; $P<0.01$) than the exotic breed (53.0%). This is not uncommon because of their free range mode of management practice which allows them free access to virtually all types of environment and hence, predisposing them to various forms of infections. According to Frontovo, (2000) and Oniye, *et al*. (2001), domestic chickens feed widely therefore, they become more predisposed to infection.

The duration for the local breed to reach table size is much longer compared to the exotic breeds which are fed usually on artificial diets. This of cause could be the likely reason for the higher infections in the local breeds which continue to accumulate parasites in the system as well as the poor management practices inherent in free range system.

The study revealed that female birds were more infected with helminth parasites than the males in both local and exotic. This might not be unconnected to their feeding. Female birds are known to be more voracious in their feeding habits especially during egg production than the males which remain largely selective.

CONCLUSION

In conclusion, more attention should be focused towards the improvement of the poultrymanagement and care of local breed of chickens which are usually free ranging. There is therefore, the need to supplement scavenging poultry with energy source.

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