



International Journal of Fauna and Biological Studies

Available online at www.faujournal.com

I
J
F
B
S
International
Journal of
Fauna And
Biological
Studies

ISSN 2347-2677
IJFBS 2016; 3(4): 15-18
Received: 05-05-2016
Accepted: 06-06-2016

Sunil Sahu
University Department of
Zoology, L.N. Mithila
University, Darbhanga-846004.
India.

Alka Anand
University Department of
Zoology, L.N. Mithila
University, Darbhanga-846004.
India.

KP Sinha
Professor, University
Department of Zoology, L.N.
Mithila University, Darbhanga-
846004. India.

Studies on the prevalence of helminthic infection in broiler poultry birds from Darbhanga region of North Bihar, India

Sunil Sahu, Alka Anand and KP Sinha

Abstract

The present communication deals with the study of prevalence of intestinal helminthic infection in broiler poultry birds. The study was conducted during February 2014 to January 2015 from different farms and market shops in and around Darbhanga town. In all 296 birds were examined and average over all prevalence was found as 156 (52.70%) and with cestodes 58 (19.59%), nematodes 76 (25.67%) and mixed 22 (7.43%), thus in an order of nematodes > cestodes > mixed ones. Among the cestodes *Raillietina* and *Davainea* infection and among nematodes *Ascaridia* and *Heterakis* were found common with prevalence as 19.25%, 4.05%, 23.98% and 5.40% respectively. Further, seasonal prevalence showed higher during summer (60.79%) followed by rainy (52.48%) and lowest during winter (37.83%) ($F_{2,6}=7.4$ at $p>0.05$). Thus the study indicated higher prevalence of helminthic infection particularly *Raillietina* (cestode) and *Ascaridia* (nematode) during summer season ($F_{3,6}=23.93$ at $p>0.001$) & $LSD=5.63$ in broiler poultry birds of the study area. Such information may be useful in designing improved poultry management in the area.

Keywords: Seasonal prevalence, helminthic infection, broiler poultry birds, Darbhanga.

1. Introduction

Intensive rising of poultry in commercial farms inevitably exposes flock to the various diseases which cause mortality of the birds and loss to the farmers. Diseased birds can also be hazardous to the human health on being taken in food. In India, huge loss of birds due to diseases is being felt by poultry farmers due to management related problems. Poultry carry heavy infection of varied types of parasites, i.e. helminth, protozoans, virus and arthropods etc. Intestinal parasitic helminthes have a serious impact on poultry health productivity, quality and quantity of meat. Helminth parasites of broiler birds are commonly divided into three main groups; cestode, nematode and trematode. The cestodes of significant importance belong to two genera *Raillietina* and *Davainea*, whereas nematodes include *Ascaridia* and *Heterakis* constituting the most important group of helminth parasites in poultry [1].

The prevalence and intensity of parasitic helminths may be influenced by several factors, such as climatic conditions (temperature and humidity) may alter the population dynamics of the parasites resulting in dramatic changes in the prevalence and intensity of helminths infection [2]. Many insects that may act as vectors for helminths are also favored by high temperature and to some extent humidity. These factors may explain the wide range and distribution of cestodes and nematode species in poultry birds, especially during the tropical summer season [3]. Hence considering the economic importance of the diseases caused by parasitic helminths in broiler chickens, which in turn affect on total production causing heavy economic loss to the farmer and also keeping in view the severity of the parasitic helminths a systematic work has been undertaken to identify the common helminth parasites and to determine the overall and seasonal prevalence of the helminth infection in Broiler poultry birds of this study area. No such report on the seasonal dynamics of broiler poultry birds has been made so far from this region, hence the present communication forms the first report from Darbhanga region of North Bihar.

2. Material and Methods

For obtaining the data on the prevalence of the intestinal helminth infection in broiler poultry birds (chickens) of Darbhanga region (North Bihar), the present study was conducted from February 2014 to January 2015 and a total of 296 broiler chickens were randomly selected from household poultry farms and market of poultry in and around Darbhanga town. The intestines of the chickens were brought to the laboratory, cut opened and simple salt flotation

Correspondence:

Sunil Sahu
University Department of
Zoology, L.N. Mithila
University, Darbhanga-846004.
India.

method was used to observe carefully for helminthic infection. The helminth parasites were collected, fixed in fixatives and further processed for taxonomic study and their identification was carried out with the help of *helminthological* key [4]. The data obtained during the survey period is tabulated and analyzed to show the prevalence of helminth infection in different months and season from different parts of study area. The detailed studies were undertaken with a view to finding out the data of prevalence of parasitic helminths in broiler poultry birds using the formula:

$$\text{Prevalence} = (\text{No. of birds infected} / \text{No. of birds examined} \times 100)$$

3. Results and Discussion

From the data in the Table 1 a considerable difference was found in the prevalence of helminthic infection among different seasons with the highest value in summer (60.79%), followed by rainy (52.48%) and lowest during winter season (37.83%). Out of 296 broiler birds examined only 156 were found infected and out of them 58 (19.59%) with cestode, 76 (25.67%) with nematode and 22(7.43%) with mixed infection and remarkably no intestinal trematode was detected in the present study. Hence in the present study the survey conducted only on the prevalence of cestode and nematode parasites. The major helminth parasites observed in the broiler poultry birds include *Raillietina* sp. (19.25%), *Davainea* sp. (4.05%), *Ascaridia* (23.98%) and *Heterakis* (5.40%) It was found that the percentage of prevalence of cestode (summer = 21.75%, rainy = 19.88%, and winter=12.64), nematode (summer = 29.00%, rainy = 26.2% and winter = 19.64% and mixed infection (summer = 10.28%, rainy = 6.30% and winter 5.53%). The overall and seasonal prevalence percentage of helminth infection was found highest during summer followed by rainy and lowest during the winter season.

The present study revealed an overall prevalence of helminth infection as 50.36% in broiler poultry birds in the study area which is more or less similar to the report of 75.8% in Quetta, Pakistan [5], 63.00% in Parbhania [6]. However, there are reports of higher prevalence from other countries such as Ethiopia 91% [7], 89.5%. Morocco [8], 89.9% [9], Kenya 90.78% [10], 93.3% [11], Nigeria 87.7% [12], Iran 96% [13] and Jordon 91.6% [14]. Thus it may be said that the prevalence of helminth infection varied in different region and countries. The probable reason for such types of difference found in the prevalence of helminth infection might be due to the management and environmental related factors. Also this

might be due to difference in the season of conducting studies, availability of intermediate hosts, individual host resistance and ecological parameters.

The present study also indicates that among the helminth infected broiler poultry birds, overall infection with cestode was found in 58 (19.59%) whereas nematode with infection 76 (25.67%), and 22(7.43%) birds showing mixed infection. That is, the prevalence of nematode infection was found higher than cestode and mixed infection, and also the higher prevalence of nematode as compared to cestode might be due to the possibility of exposure to suitable less number of intermediate hosts availability around the farms and difference in the intensity of care between the farms in the area.

Remarkably no trematode infection was found in the present study which might be due to the absence of necessary intermediate (molluscan) host around the farms.

The prevalence of helminth infection was found highest during summer, followed by rainy and lowest in winter season and these findings are more or less similar to that of [15]. Such seasonal difference, statistically significant ($F_{2,6}(\text{Season}) = 7.47$ at $p > 0.05$; $LSD = 6.46$) may be due to different geographical area, study period and seasonal changes due to temperature and humidity also. Many insects that may act as vectors for helminth infection are also favored by high temperature and to some extent of humidity. These factors may explain the wide range and distribution of cestode and nematode species in poultry, especially during the tropical rainy season. Hence, it may be pertinent to point out that seasonal difference in infection due to helminth species is not so much statistically significant ($F_{2,6} = 2.12$) i.e. season has no much influence on the prevalence of helminth species whether cestode or nematode species. However, the prevalence of *Raillietina* (cestode) and *Ascaridia* (nematode) is significantly higher ($F_{3,6} = 23.93$ at $p.0.001$; $LSD=5.63$) as shown in Table-2 during summer, rainy & winter in comparison to *Davainea* (cestode) and *Ascaridia* (nematode).

Thus, this result strongly suggested that *A. galli* (nematode) and *Raillietina* (cestode) are the most important and very common parasitic helminths of poultry. Both of these affect the growth rate and weight loss, which may be related to damage to the intestinal mucosa and intestinal significantly affect the health of chickens by sharing the feed consumed by the host, thus causing stunted growth and reduced egg and meat production of the host birds.

Table 1: Overall prevalence of helminthic infection in broiler poultry birds from Darbhanga region during annual cycle 2014-2015.

Season	Months	No. of examined birds.	No of infected birds (prevalence)	Seasonal Prevalence	Number and prevalence of helminthic infection		
					Cestode	Nematode	Mixed
Summer	Feb	24	12(50.00)	60.79	3(12.50)	6(25.00)	3(12.50)
	Mar	33	21(63.63)		9(27.27)	8(24.24)	4(12.12)
	Apr	25	17(68.00)		7(28.00)	9(36.00)	1(4.00)
	May	26	16(61.53)		5(19.23)	8(30.76)	3(12.50)
Rainy	June	15	07(46.66)	52.48	2(13.33)	4(26.66)	1(6.66)
	July	23	12(52.17)		4(17.29)	6(26.08)	2(8.69)
	Aug	31	19(61.29)		10(32.25)	8(25.80)	1(3.22)
	Sep	30	15(50.00)		5(16.66)	8(26.66)	2(6.66)
Winter	Oct	22	8(36.36)	37.83	3(13.63)	4(18.18)	1(4.54)
	Nov	19	4(21.05)		1(5.26)	2(10.52)	1(5.26)
	Dec	17	5(29.41)		1(5.88)	3(17.64)	1(5.88)
	Jan	31	20(64.51)		8(25.80)	10(32.25)	2(6.45)
Total		296	156(52.70)		58(19.59)	76(25.67)	22(7.43)
Mean±SD				50.36±9.85	18.09±4.14	24.94±3.75	7.37±2.51

Figures within brackets showing prevalence in %

$F_{2,6}(\text{Season}) = 7.47$; $P > 0.05$

$F_{3,6}(\text{population}) = 23.7$; $P > 0.001(\text{HS})$ $LSD = 6.46$

Table 2: Species wise prevalence of helminth parasites.

Season	No. of birds examined	Number & prevalence (%) of birds infected with Helminth Parasites			
		<i>Raillietina</i>	<i>Davainea</i>	<i>Ascaridia</i>	<i>Heterakis</i>
Summer	108	26(24.07)	4(3.70)	29(26.85)	7(6.48)
Rainy	99	21(21.21)	3(3.03)	23(23.23)	6(6.06)
Winter	89	10(11.23)	5(5.61)	19(21.34)	3(3.37)
Mean % of infected birds	296	57(19.25)	12(4.05)	71(23.98)	16(5.40)

F Df 2,6 (Season) = 2.12(NS) F 3,6(helminth species) =23.93 ; p>0.001 LSD = 5.63

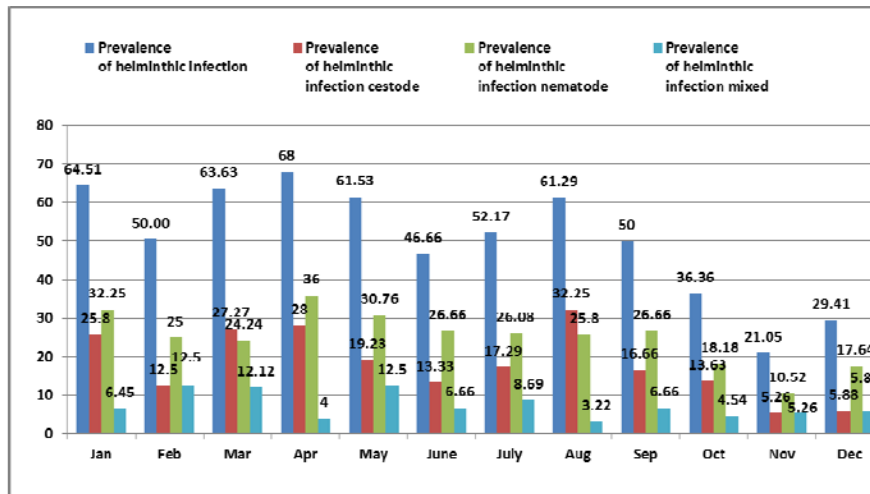


Fig 1: Monthly Variation of Helminthic Infection in Broiler Poultry Birds

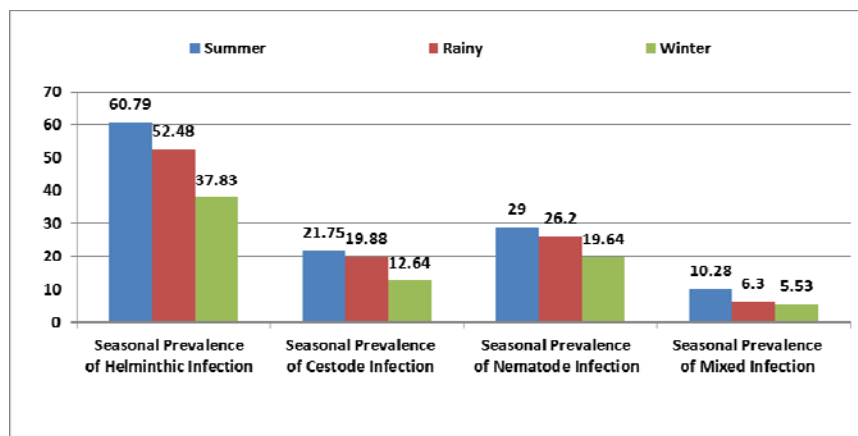


Fig 2: Seasonal Variation of Helminthic Infection in Broiler Poultry Birds

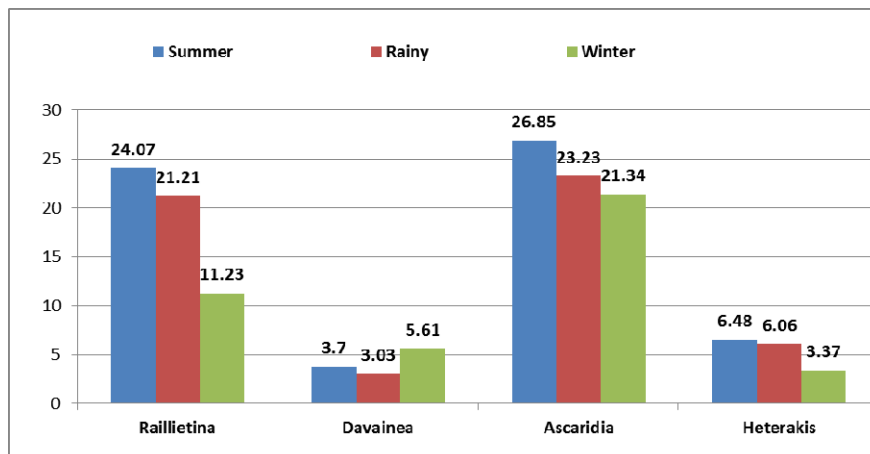


Fig 3: Species Wise Prevalence of Helminthic Infection in Broiler Poultry Birds

4. Conclusion

The present study revealed that helminth infection is commonly and no less importantly found in broiler poultry bird in Darbhanga Region. The most common cestode and nematode species in broiler poultry birds are *Raillietina spp.* and *Ascaridia spp.* respectively. The prevalence of helminth infection in relation to season was found highest during summer than the rainy and lowest during winter season regardless of the helminth species. Among the species *Ascaridia galli* is the most prevalent parasite affecting the health of broiler poultry birds. Furthermore, it is interesting to point out that the prevalence of helminthic infection with regard to helminth species, particularly *Raillietina* (cestode) and *Ascaridia* (nematode), showed almost similar trends in relation to seasonal difference as well as helminth species. That is, the host birds, whether desi birds^[16] or broiler birds, showed no significant difference in the order or trends of prevalence of helminthic infection when compared. The study indicated the helminth infection particularly cestode and nematode is highly prevalent in this region. Therefore, improved poultry management practices for controlling the helminth infection and further studies on the appropriate control measures of helminth parasite in broiler poultry birds need to be advised for improvement of poultry egg and meat production.

5. Acknowledgement

The authors acknowledge thanks to the Head of the University Department of Zoology, L. N. Mithila University, Darbhanga for providing laboratory and library facilities for the present study and also thankful to poultry farmers and market shopkeepers.

6. References

1. Naphade ST. Studies on the prevalence of helminthic infection in broiler poultry birds from Marthwada region, (MS) India, Science Research Reporter Biosciences. 2013; 3(2):233-238.
2. Magwisha H, Kassuku A, Kyusgaard N, Permina A. A comparison of the prevalence and burdens of helminth infections in growers and adult free range chickens. Tropical Animal Health Production. 2002; 34(3):205-214.
3. Dube S, Zindi P, Mbanga J, Dube C. A study of Scavenging Poultry Gastrointestinal and Ecto-parasites in Rural Areas of Matebelel and Province, Zimbabwe, International Journal of Poultry Sciences. 2010; 9(9):911-915.
4. Soulsby EJ. Helminthes Arthropods and Protozoa of Domesticated Animals (7th edn). Bailliere Tindall, east Sussex, 1982.
5. Faizullah Ahmed S, Babar S, Fareed SK, Kakar MA, Ziaulhaq Jan S. Helminthosis of rural poultry in Quetta, Pakistan. Eurasian J Vet Sci. 2013; 29(2):103-105.
6. Hange RR, Roate YV, Jayraw AK. Prevalence of helminth parasites in desi fowl (*Gallus gallusdomesticus*) at Parbhani. Journal of Parasite Diseases. 2007; 31(1):61-64.
7. Eshetu Y, Muluaalem E, Ibrahim H, Berhanu A, Aberra K. Study of gastro-intestinal helminthes of scavenging chickens in four rural districts of Amharagegion, Ethiopia Revision Science Techniques Office International Epizootic. 2001; 20(3):791-796.
8. Heyradin Hussien, Haseen Chaka, Yosef Deneke, Molalegne Bitew. Gastrointestinal Helminths Are Highly Prevalent in Scavenging Chickens of Selected Districts of Eastern Shewa Zone, Ethiopia, Pakistan Journal of Biological Sciences. 2012; 15:284-289.
9. Hassouni T, Belghyti D. Distribution of gastrointestinal helminth in chicken farms in the Gharb region-Morocco Parasitol Res. 2006; 99:181-183.
10. Irungu LW, Kamani RN, Kisia SM. Helminth parasites in the intestinal tract of indigenous poultry in parts of Kenya Tydskr S Afr Vet Ver. 2004; 75(1):58-59.
11. Mungube EO, Bauni SM, Tenhagen BA, Wamae LW, Nzioka SM, Muhammed L *et al.* Prevalence of parasites of the local scavenging chickens in a selected semi-arid zone of Eastern Kenya Trop Anim Health Prod. 2007; 40:101-109.
12. Yoriyo KP, Adang KL, Fabiyi JP, Adamu SU. Helminthes parasites of local chickens in Bauchi State, Nigeria Science World Journal. 2008; 3(2):35-37.
13. Eslami A, Ghaemi P, Rahbari S. Parasitic infections of free-range chickens from Golestan Provinces Iran, Iran J Parasitol. 2009; 4:10-14.
14. Hamad H, Al-Jamaien. Helminth Parasites in the intestinal Tract of Indigenous Chickens in Jordanian Villages, Pakistan Journal of Nutrition. 2013; 12:209-212.
15. Shahin AM, Lebdan MA. Prevalence of Chicken Cestodiasis in Egypt, New York Science Journal. 2011; 4(9):21-29.
16. Sahu Sunil, Sinha KP. Studies on the prevalence of helminthic infection in desi poultry birds from Darbhanga region of North Bihar, India, International Journal of Fauna and Biological Studies. 2016; 3(3):87-90.