

# INCIDENCE OF ENDOHELMINTH PARASITES IN THE ALIMENTARY CANAL OF DOMESTIC FOWL (*GALLUS DOMESTICUS*), BUTCHERED AT PIPAR CITY, JODHPUR

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## ABSTRACT

This investigation was carried out to assess the prevalence and species diversity of helminths in domestic fowl (*Gallus domesticus*). For this purpose, 120 gastrointestinal tracts of fowls butchered at the local market of Pipar city, were gathered and screened for helminth parasites. A high rate of helminth infection (53.33%) was observed. Three types of cestode parasites were recovered from the gastrointestinal tract of tainted fowls. One cestode *Raillietina tetragona* and two nematodes, *Heterakis gallinarum* and *Ascaridia galli* were recovered throughout the present investigation. *A. galli* was the most common nematode in checked alimentary tracts of fowls. The prevalence of identified helminth species were, *Raillietina tetragona* (9.16%), *Heterakis gallinarum* (13.33%), and *Ascaridia galli* (30.83%). Parasite inclination in regard to sex was additionally recorded. Females (42.5%) were more contaminated than males (10.83%). Single kind of contamination was discovered more pervasive than double and triple infection.

**Keywords:** Endohelminths, Prevalence, Incidence, *Gallus domesticus*.

## INTRODUCTION

The domestic fowl feeds on a wide range of nutrition substance extending from grains, organic products, and insects which may harbor infective phases of gastrointestinal parasites. Helminth infection was thought to be critical issues in chickens (Jansen and Pandey, 1989 and Abebe et al., 1997). Helminth parasites are a significant reason for the decrease in wellbeing of *Gallus domesticus*.

An extensive number of helminths are generally spread all through the world in unfenced poultry. Helminth parasites of fowls are wide-ranging in numerous parts of the world (Hodasi, 1969). Fowls endow with high dietary esteem and other financial advantages to people which cannot be over emphasized (Matur, 2002). The chicken production is compelled by numerous extraneous aspects among which ailing health, poor administration and the nonattendance of veterinary care. The incidence and intensity of helminth contaminations in fowls might be impacted by a few factors as the dispersion of intermediate host and their infectivity. Insects and houseflies play a significant role as transitional host for most types of cestodes (Baba and Oveka, 2004). Consequently, studies led in various parts of the world showed that the extent of chicken contamination with gastrointestinal helminths is high, in this manner helminths are thought to be an imperative reason for sick wellbeing and declining in poultry yield (Ajala et al., 2007). Saxena and Nama (1976) made an attempt to reveal helminth infections in domestic fowls of Jodhpur, Rajasthan.

Looking to the economic importance and absence of any work in this area an attempt has been made to investigate the helminth parasites found in domestic fowls of Pipar city, Jodhpur. This examination is intended to giving data on helminth dispersion, incidence, dominance and parasite load.

## MATERIALS AND METHODS

**Study area:** Jodhpur district is among the biggest districts in the state of Rajasthan. It is halfway arranged in the western region of the state, and covers an aggregate geological territory of 22850 Sq. Km. This area goes under the parched zone of the Rajasthan state. Pipar City is a city and a municipality in Jodhpur district (Rajasthan) and 65 km away from Jodhpur. Its geographical coordinates are 26° 23' 8" North and 73° 32' 16" East.

**Examination procedure:** The alimentary canal of fowls were collected from February to July, 2017, i. e., for six months from different butcher shops at Pipar City, Jodhpur. Collected samples of alimentary canals were transported to the Parasitology Laboratory, Department of Zoology, J.N.V. University Jodhpur for parasitological examinations. The recovered helminth parasites were collected, preserved, processed to a permanent slide and identified under compound microscope. Helminths recovered from the gastrointestinal tract were counted and preserved in 70% alcohol with 5% glycerine. For identification, the cestodes were stained with aceto-alum carmine and the nematodes were cleared with lactophenol. Parasites were identified according to the keys and description given by Yamaguti (1958) and Soulsby (1982).

**OBSERVATION**

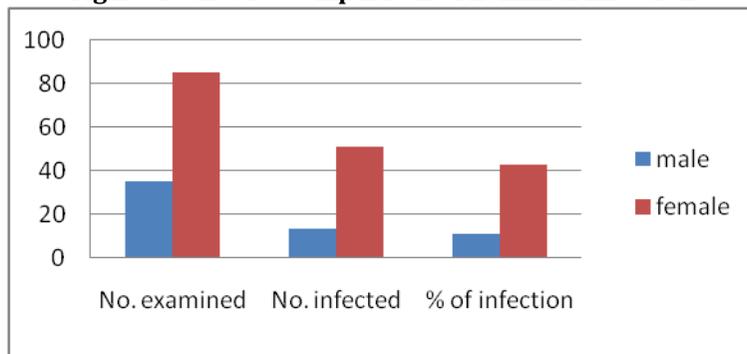
Out of a total of 120 alimentary tract samples of fowls (35 males and 85 females) examined, 64 (14 males and 48 females) were found to be infected. The overall infection was 53.33% (10.83% in male and 42.5% in female). The infection was higher in females than males (Figure 1). In all three helminth species, one of cestode, *Raillietina tetragona* and two of nematodes, *Heterakis gallinarum*, and *Ascaridia galli*, were recovered. No trematode or acanthocephalan was found during study period.

The quantitative structure of helminthes ascertained consisted of number of infected hosts, number of individual helminth species recovered, prevalence, average intensity, index of invasion and dominance percentage, as shown in table 1. The overall helminthes prevalence was 53.33%, average intensity 14.95, index of invasion 4.25 and dominance percentage 100. Of the three helminth species, *A. galli* was most common with highest burden of worms, prevalence, average intensity, index of invasion and dominance percentage while *R. tetragona* has least for the same (Table 1). Of 64 infection cases, infection with single helminth comprised 55 cases (85.93%), infection with two helminth species 8 (12.5%) and triple helminths infection 1 (1.56%). The percentage of single infection was higher in females than males. The double and triple invasions were restricted to female hosts only.

Table 1. Quantitative structure of helminths infectivity in *Gallus domesticus*.

Helminths	No. of examined hosts	No. of infested hosts	No. of helminths	Prevalence	Average intensity	Index of invasion	Dominance %
Cestode							
<i>R. Tetragona</i>	120	11	37	9.166666667	3.363636364	0.028263889	3.866248694
Nematodes							
<i>H. gallinarum</i>	120	16	98	13.33333333	6.125	0.108888889	10.24033438
<i>A. galli</i>	120	37	822	30.83333333	22.21621622	2.112083333	85.89341693
<b>Total</b>	<b>120</b>	<b>64</b>	<b>957</b>	<b>53.33333333</b>	<b>14.953125</b>	<b>4.253333333</b>	<b>100</b>

Figure 1 sex-wise comparison of helminth infection



**DISCUSSION**

Present study revealed a high prevalence (53.33%) of helminth infectivity in domestic fowl (*Gallus domesticus*) with 3 helminths, 1 cestode, and 2 nematodes. The high pervasiveness of infectivity observed in domestic fowl can be because of the sort of production system, their consistent contact with intermediate host, free-ranging management and climatic situation (Yadav and Tandon 1989 and Magwisha et al., 2002). As per Frantovo (2000), local chickens feed widely hence; they turn out to be more inclined to infectivity in free range system. The helminth invasion in fowls is not exceptional in view of their unfenced method of management which permits them free access to for all intents and therefore, inclining them to different types of infections. Permin and Nansen, (1996) reported expanded invasion of internal parasites including *Heterakis* and *Ascaridia* which are causing non-particular clinical signs, loss of hunger and development. Hedge et al. (1973) recorded 80.6% infection in desi (free range) fowls and 13.6% in farm birds with 10 helminth species in Mysore (India). Mpoame and Agbede (1995) revealed 93.55% of residential fowl infected with gastrointestinal helminthes. Eshetu et al. (2001) found 91.01% chickens tainted with gastrointestinal helminthes from Amhara area Ethiopia. Ayshia and Showkat (2015) reported *R. tetragona*

(51.42%) as most common helminth in domestic fowl and *A. galli* (30.71%) as least infecting helminth species.

Numerous researchers reported *Ascaridia galli* as most predominant helminth in domestic fowls. Qureshi (1950) reported a high frequency of *A. galli* (31.02%) in Desi grown-up fowls in U.P India. Saxena and Nama (1976) reported relative findings with 46% prevalence in Jodhpur, Rajasthan. Wilson et al. (1994) revealed the occurrence of *A. galli* was in the range of 40% on commercial farms in the state of Arkansas. Shukla and Mishra (2013) stated *A. galli* as most widespread in both local and exotic species of chickens. Jordan and Pattison (1996), Luka and Ndams (2007) and Sonune (2012) also reported *A. galli* as the commonest and most imperative helminth of chickens, and by present workers. Since the present outcomes are in consensus with those of numerous others, still the dissimilarity can be ascribed to the lacking accessibility of intermediate host ecological conditions in the territory.

In present findings, helminthes tendency in relation to sex was too observed and revealed that the high level of contagion rates saw in females than in the males. Identical kinds of findings are additionally revealed by Saxena and Nama (1976) and Shukla And Mishra (2013). The present investigation uncovers that single kind of infection were more persistent than multiple type infection. Multiple type infections of helminths in domestic fowls were also reported by Saxena and Nama (1976), Yadav and Tondon (1989), Magwisha et al. (2002).

### CONCLUSION

After the analysis of observed data, the present study can be presumed that the infections of helminth parasites have happened in domestic fowls of Pipar City, Jodhpur. Sustaining living spaces of the host, accessibility of infective hosts and free-ranging management, and such reasons are liable of influencing the parasitic infections. From the present outcomes, clearly, helminth infection is generally predominant in domestic fowls of Pipar city. In conclusion, more awareness should be focused towards the enhancement of the poultry administration and care of domestic fowls which are generally free ranging.

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### REFERENCES

1. Abebe W, Asfaw T, Genete B, Kassa B, Drochies P (1997) Comparative Studies Of External Parasites and Gastrointestinal Helminthes of Chickens Kept Under Different Management System in and Around Addis Ababa. *Revue de Medicine veterinaire*. 148, 497-500.
2. Ajala, MK, Nwagu, BI and Otchere, EO (2007) Socioeconomics of free-range poultry production among Agropastoral women in Giwa Local Government Area of Kaduna State, Nigeria. *Nig. Vet J.*, 28, 11-18.
3. Ayshia A and Showkat AW (2015) Endohelminth parasites of domestic fowl (*Gallus domesticus*) in Doda district of Jammu and Kashmir state, India. *Journal of Indian Veterinary Association*. 13(1), 40-43.
4. Baba, SS and Oveka, CA (2004) Prevalence of intestinal helminthes in poultry farms in Anambra State Nigeria. *Bull. Anim. Health prod. Afr.* 37, 217-220.
5. Eshetu Y, Mulualem E, Ibrahim H, Berhanu A, Aberra K (2001) Study of Gastrointestinal helminthes of scavenging chickens in four rural districts of Amhara region Ethiopia. *Rev Sci Tech off Int Epiz.* 20, 791-796.
6. Frantovo D (2000) Some parasitic nematodes (Nematoda) of birds (Aves) in Czech Republic. *Actu Societatis Zoologicae Bohemicae*. 66, 13-28.
7. Hedge KS, Rahman SA, Rajasekariah GR, Ananth M and Joseph B (1973) Comparative studies on the incidence of intestinal helminthes in desi birds reared on free-range system and farm birds under hygienic conditions. *Mysore J. Agri. Sci.* 7, 102-105.
8. Hodasi JKM (1969) Comparative studies on the helminth fauna of Native and introduced domestic fowls in Ghana. *Journal of Helminthological*, 43, 35-52.
9. Jansen J, Pandey VS (1989) Observations on Helminth Parasites of Domestic Fowls in Zimbabwe. *Zimbabwe Veterinary Journal*. 20, 15-17.
10. Jordan FTM and Pattison M (1996) *Poultry diseases*, 4th edition, 283-286.
11. Luka SA, Ndams IS (2007) Gastrointestinal Parasites of domestic chickens *Gallus gallus domesticus* Linnaeus 1758 in Samaru Zaria Nigeria. *Science World Journal*. 2, 27-29.
12. Magwisha HB, Kassuka AA, Kyvsgaard NC, Permin A (2002) A comparison of the prevalence and burden of helminth infections in growers and adults free range chickens. *Tropical Animal health and Production*. 34, 205-214.

13. Matur BM (2002) Prevalence of some gastrointestinal parasites in pullets of chickens (*Gallus gallus domestica*) in the Federal Capital Territory Abuja, Nigeria *Journal of tropical Biosciences*, 2(1), 78-82.
14. Mpoame M, and Agbede G (1995) The Gastrointestinal helminth infection of domestic fowl in Dschang, Western Cameroon. *Rev Elev Med Vet Pays Trop.*, 48, 147-151.
15. Permin A, Nansen P (1996) Parasitological Problems in organic poultry production. *Beretning Fra Statens Husdyrbrugsforsog.*, 729, 91-96.
16. Qureshi SH (1950) Incidence of helminthic infection in fowls in the Uttar Pradesh (UP). *Indian Journal of Helminthology*, 2, 57-62.
17. Saxena A and Nama HS (1976) Incidence of helminthes parasites in domestic fowl in Jodhpur, Rajasthan. *Indian Journal of Helminthology*, 28 (2), 110-113.
18. Shukla S and Mishra P (2013) Gastrointestinal helminthes parasites of local chickens samples from tribal areas of Madhya Pradesh. *Int. J. of Life Sciences*, 1 (4), 284-287.
19. Sonune MB (2012) Analysis of gastrointestinal parasites of poultry birds around Chikhli, Buldana (M.S.) India. *Science Research Reporter*, 2 (3), 274-276.
20. Soulsby E JL (1982) *Helminths, Arthropods and Protozoa of domesticated animals.* Bailliere Tindall, London.
21. Wilson YI, Yazwinski TA, Tucker CA, Johnson ZB (1994) A survey into the prevalence of poultry helminthes in northwest Arkansas commercial broiler chickens. *Avian Dis.*, 38, 158-60.
22. Yadav AK and Tandon V (1989). Helminth parasitism of domestic fowl (*Gallus domesticus* L.) in a subtropical high rainfall area of India. *Br. Vet. J.*, 145 (1), 57-61.
23. Yamaguti S (1958) *Systema Helminthum.* Vol. I, II, III and V, Interscience Publishers, Inc. New York, USA.