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ISOLATION AND IDENTIFICATION OF PARASITES IN COUNTRY FOWL (*GALLUS DOMESTICUS*)

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Abstract

The present study focuses on the isolation and identification of parasites in country fowl (*Gallus domesticus*), a vital component of rural poultry farming in India. The research highlights the prevalence, mean intensity, and abundance of parasitic infestations in indigenous chickens, emphasizing their impact on poultry productivity and economic returns. The study identifies gastrointestinal parasites, including nematodes (*Ascaridia galli*) and cestodes (*Raillietina tetragona* and *Raillietina echinobothrida*), as the primary culprits affecting the health of country fowl. Statistical analysis was employed to determine prevalence, abundance, and mean intensity of parasitic infestations. The study underscores the importance of addressing parasitic diseases to improve poultry productivity and support rural livelihoods.

Introduction:

The poultry industry is one of the fastest-growing sectors in India, contributing significantly to socio-economic development and rural livelihoods. Native chickens are resilient, requiring less labor and surviving in tough conditions, but are prone to parasitic infections. Parasites spread through contaminated soil, water, insects, and rodents, affecting poultry productivity and causing economic losses.(Anwar et al. 1991) Gastrointestinal helminthiasis (caused by tapeworms, roundworms, and flukeworms) and coccidiosis (caused by *Eimeria* species) are prevalent in poultry. Intestinal parasites are the most prevalent and devastating, significantly affecting chicken productivity.

This leads to lower egg production, slower growth rates, and higher mortality rates, which directly impact economic returns (Dube et al. 2010.) Parasitic infections result in additional costs for treatment, prevention, and management, increasing the financial burden on poultry farmers. Poultry diseases caused by parasites interfere with the overall development of the poultry industry, reducing its potential to contribute to socio-economic growth. Parasitism inflict heavy economic losses to poultry industry particularly of free range chicken in rural house hold in the form of anorexia, retarded growth, reduced weight gain, decreased egg production, diarrhoea, intestinal obstruction, morbidity and mortality (; Shah et al. 1999;; Katoch et al. 2012) Chickens provide high nutritional value and economic benefits, including employment opportunities. Parasitic infections compromise these benefits, especially in rural areas where poultry farming is a major livelihood source. Salam (2015) Parasites can spread through contaminated soil, drinking water, and litter Parasites can be transmitted by insects and rodents that act as carriers.. (Soulsby, 1982). Intermediate Hosts: Chickens can ingest snails, earthworms, or other insects that carry the infective stages of parasites. Direct Ingestion: Chickens may consume contaminated feed or water containing parasitic eggs (Payal Kumari et al., 2004.), Prevalence of gastrointestinal parasites in desi fowl has been reported by various workers from different parts of world (Permin et al. 2002; Ashenafi and Eshetu 2004; Pinckney et al. 2008; Yehualashet 2011; Percy et al. 2012) including India (Sundaram et al. 1962; Devada and Sathianesan 1989; Hange et al. 2007; Puttalakshamma et al. 2008; Katoch et al. 2012).

Methodology:

Collection of Parasites :

- Chicken randomly selected from the back yard poultry farms, The whole intestinal tracks were removed carefully and intestine was separated from other parts of the gastrointestinal track.
- The small intestine was opened by longitudinal in scission using a pair of scissors the contents of small intestine



were examined carefully to observe parasites.

- The intestine was washed through running tap water the mucosal surface were rubbed carefully between fingers to remove and parasite. The parasite were placed in Petridish which contain saline water. Then the parasites were preserved in 4% formalina solution for one day.

Slide presentation and staining:

- After isolation parasite was placed on a slide and another slide was placed over it and tide using a thread. Then the slide were pairs in distilled water for 5 minutes and pure ethyl alcohol for 5 min. Then the slide was stained with acetocarmine for 5min and then was magnification.Often staining the slide and threads were remote and the parasites was covered using mounting agent DPX (mixture of Di styrene and xylene).

Parameters:

The prevalence, abundance, and mean, intensity were found out by the means of statistical analysis (Marogolis.et.al...1982)

Prevalence%

Prevalence = number of infected host/total number of host examined ×100 Abundance %

Abundance = number of parasites/total number of host examined ×100 Mean intensity %

Mean intensity =number of parasites/total number of infected host×100

Results :

In the present investigation and attempt has been made to study the parasitic infection in the host species, the desi Gallus domesticus and the parasites recorded was Cestodes is Raillietina tetragon, raillietina echinobothrida and Nematodes Ascaridia. galli the prevalence, abundance and mean intensity was studied.

Morphology of Raillietine Tetragona

- Raillietine tetragonal is a tapeworm that infects poultry, particularly infect chickens.
- The head is small pin like and futures for well-formed hemispherical suckers and anarmed rostrum.
- Raillietine tetragonal is the largest among alien tapeworm measuring up to 30 cm in length and 1 to 1.5cm in breath (or) width
- It is whitish in colour and entire body is covered with integument.
- The bodies divisible into the head region called scolex followed by an and segmented neck and then by the segmented body proper called strobila.
- Ribbon like body segments called proglottids Pathogenicity:
- Raillietina tetragona can cause reduction in growth rate in infected birds.
- Infection can lead to area and birds may lost weight.
- The body is white colour.
- The body is covered with an integument.
- The body is 1 to 1.5 cm with length up to 25 cm.
- The head region called scolex has four suckers and arostellum required to attend to host neck is un segmented and body is segmented called as stabile.
- R.echinobothrida causes several health illnesses in chicken as it inhibits the small intestine and depends upon the host for food leading to stunted growth in young animals.
- The parasite identified as ascaridia.galli is a parasitic roundworm belonging to the phylum nematode.



Yamaguti(1959).

Morphology of A.galli

- A. galli is the largest nematode in birds, with female measuring 72 to 112 mm long.
- A. galli cylindrical shape and creamy white colour.
- Body semi-transparent.
- The body is covered by a thick cuticle, which has transverse stripes.
- The front end has a mouth with three large, three lobe lips and each lips has toothlike structures.
- The body is enclosed in a tough, striated cuticle, which is transversely make along the entire length.
- The mouth surrounded by 3 large, trilobed lips.
- These lips have tooth like denticles.(Todd AC, Crowds2015)

No of host	No of infected	No of nematode extracted	Cestode	Prevalence Percentage of A.galli	Abundance percentage of A.galli	Mean percentage of A.galli	Prevalence percentage of R.T	Abundance percentage of R.T	Mean Percentage of R.T	Prevalence percentage of R.E	Abundance percentage of R.E	Mean percentage of R.E
Examined	Infected	Nematode	Cestode									
		A.galli	Raillietina tetragona	Raillietina Echinobothrida								
6	6	-	11	10	100%	0%	0%	100%	183	183	100%	166
6	6	1	8	8	100%	16.66%	16.66%	100%	133	133	100%	133
6	6	-	8	8	100%	0%	0%	100%	133	133	100%	133
6	6	-	10	11	100%	0%	0%	100%	166	166	100%	183
6	6	-	11	11	100%	0%	0%	100%	183	183	100%	183

Table No.1 Prevalence abandons and mean intensity of gastro intestinal parasites in country fowl

1. **Parasites Identified:** The study identified nematodes (Ascaridia A. galli) and cestodes (Raillietina tetragona and Raillietina echinobothrida) in country fowl.
2. **Prevalence, Mean Intensity, and Abundance:** These metrics were calculated using statistical



analysis, showing variations across different groups of chickens.



Fig.1: Extracted Parasites from intestine of fowl.

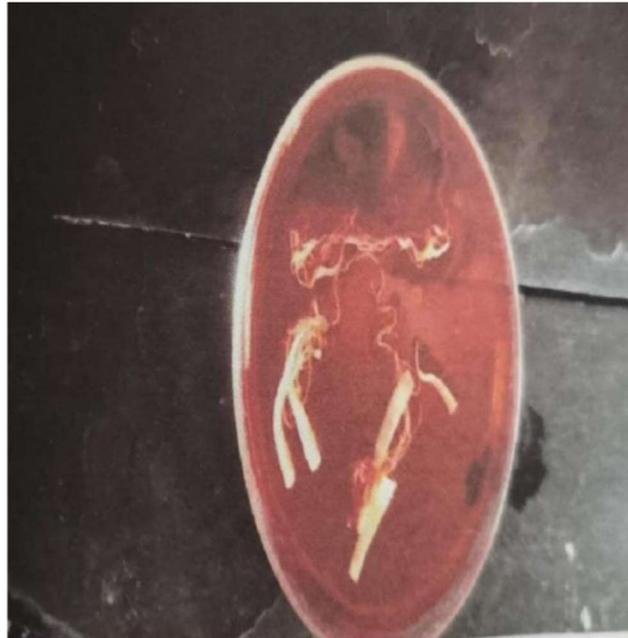


Fig.2: Parasites in Acetocarmine stain



Fig.3: A.galli nematode



Fig.4: Raillietina Tetragona



Fig.5: *Raillietina. echinobothrida*

Discussion

Impact of Parasites: Intestinal parasites are the most prevalent and harmful, significantly affecting chicken productivity and economic returns. Infection Sources: Chickens acquire infections through contaminated feed, water, litter, or intermediate hosts like snails and insects. (Rao et al 2018) Environmental Factors: Geo-climatic conditions such as rainfall, humidity, and temperature influence parasitic growth and development. Age and Infection Rates: Older chickens have higher infection rates due to increased exposure to intermediate hosts, while younger chickens have lower prevalence due to limited exposure. The high prevalence rate of gastrointestinal parasitism in desi fowl in the present study could be attributed to the fact that the desi fowl were free ranging and have access to infective stages in the environment and to the intermediate hosts like beetles, earth worms, ants etc. (sridevi et al (Katoch et al 2012).

The study confirmed the presence of nematodes (*Ascaridia A. galli*) and cestodes (*Raillietina tetragona* and *Raillietina echinobothrida*) in country fowl. These parasites significantly impact poultry productivity and economic returns, with infection rates varying by age and environmental factors.

In summary, parasitic infections in poultry lead to decreased productivity, increased costs, and hinder the economic growth of the poultry industry, particularly in developing countries. Similar reports were given by (Anwar et al 1991).

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