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Studies on the gastrointestinal parasite of local chicken (*Gallus Gallus Domestica*) in Sangamner region, Ahmednagar district, Maharashtra

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ABSTRACT

*In the present study for determining the popularity of Gastro-intestinal parasites of Local chickens (*Gallus-Gallus domestica*), A sample of 90 Gastrointestinal tract (Male and Female) were collected from local market. Breed is like the Gavthi chicken, Broiler chicken and R.R.chicken, totally 30 samples of infected intestines were get dissected from each breed. Amongst them the highest infection of parasites is observed in local Gavthi chicken (96.66%), in Broiler (53.33%), and the lowest infection is in R.R. Chicken (13.33%). The cestode and nematodes were found the mixed infection. The helminthes parasites were found amongst them the species A: *Raillietina aqurdritesticulata* spp. And B : *Raillietina cesticillus* spp. get observed in more range.*

Keywords: Parasites, Nematode, Helminthes, Gavthi, Broiler, R.R, *Raillietina cesticillus* , *Raillietina aqurdritesticulata* spp.

1. INTRODUCTION

Gastrointestinal Parasites when live in the intestine of hosts, they utilize food from the gastrointestinal tract. There are the metabolism of these parasites depends on the feeding habits and the rich nourishment available in the gut of the host. These worms use this nourishment for their normal development and growth[1]. A domestic fowl or chicken (*Gallus gallus domesticus*) is one of the most common and domesticated birds than any other species in the world. Human keep chickens primarily as a source of food, consuming both their meat and their eggs[2]. Parasitic infections in chicken are India's major problems that cause economic damage to the country. Household fowls are more frequently infected due to unhealthy management practices, malnutrition, lack of veterinary supervision, and the complex life cycle of parasites. Chicken infected with parasites show retarded growth, decreased egg production, reduced weight gain, significant hemoglobin depression[3], Gastro- intestinal parasites are however the most prevalent and most disturbing parasites affecting chicken productivity[4]. In village, chicken are raised mainly under the free range with partial or no housing and this predisposes the chicken to disease and parasites especially helminthes. The different types of helminth parasites infect the chicken flocks. Worms find cozy places to stay in the crop, gizzard, intestine, caecum, windpipe and even the eyelids[5]. On the basis of their site of location helminthes are of different types, the worm which are found in the caecum of large intestine are called caecal worms (*Heterakis* SPP.), worms which are found in eye are called eye worm (*Oxyspirura mansoni*), Gape worms are found in trachea (*Syngamus trachea*) [5]. These worms are also called "red- worm" or "forked-worm" and birds infected with gape worm show "open mouth breathing characteristics". Round worm (*Ascaridia*) and tape worms (*Raillietina*) are found in intestine while thread worm (*Capillaria*) is found in crop or oesophagus [6]. The eggs and immature stages of many parasitic worms can live outside of the chicken host for a long time, possibly several years, where as the some parasitic worms spend part of their life cycle in other creatures such as earthworms, insects, slugs or snails. Chicken pick up worms by eating dirt or litter contaminated with worms eggs or by eating small creatures carrying immature stages of worm [6]. The common internal parasitic infections occur in the poultry include cestodes, nematodes and coccidia. These worm infections may cause considerable damage and great economic loss to the as the poultry industry due to the malnutrition, decreased feed conversion ratio, weight loss, lowered egg production and death in young birds[7]. Therefore the further study is done for the good poultry management and to improve the quality of chicken.

2. MATERIALS AND METHODS

Study Area:

Sangamner selected as a study area for the present investigation, is a located (between latitude 19.5761° N, and longitude 74.2070° E) at Sangamner taluka, Ahmednagar district, Maharashtra. Climate of this area is mainly dry and warm, with an average annual temperature of 25.2 ° C. 77.4 ° F about 476 mm .It receives 18.7 inches of rainfall annually.



Fig. 1: Google image of Sangamner.

Collection of Intestine samples

In the present study for determining popularity of Gastro-Intestinal Parasites of Local Chickens (*Gallus Gallus domestica*), A sample of 90 Gastrointestinal tract (Male and Female) chickens was randomly collected from a local market in a polythene Bags with 10% formalin from Sangamner, in between 8.30 to 9.00 a.m. from September 2020 to March 2021. The samples were transported to the Laboratory of zoology department of, P.V.P.college pravaranagar for further treatment.

Examination of Parasite

The gastrointestinal tracts of the sample were spread and separated into different sections. The lumen was removed, emptied and washed and its mucosal surface was carefully rubbed to remove any parasite in the surface as described by[8]. The collected parasites (visible worms) were fixed, preserve in a specimen bottle containing 10% formalin and counted. The mucosal surface of the lumen was then scrapped into clean Petri dish and observed under microscope for smaller helminthes and protozoan parasite morphological identification as described by[9,10]. The small intestine and large intestine were removed and opened carefully by scissor to diagnose the parasites. The small pieces of the infected small intestines were cut and transferred to the 10% formalin for fixation.

Preparation of Permanent Slides of for Parasites for Study

Fixation: - Parasites (Cestodes) recovered from the intestines were fixed in Carnoy's fixative. The specimens were placed between two slides held together, rubber bands and additional weight was kept over the slides. The slides were then placed in petridish containing Carnoy's fixative for 15 minutes. After fixing, the specimens were hydrated and then preserved in 10% formalin to which few drops of glycerin were added.

Dehydration; - Material was dehydrated in different ascending alcoholic grades (30%, 50%. 70%. 90%, 100% I, 100% II). 20 - 30 minutes were given to the material in each alcoholic grade and then dealcoholised in Xylene.

Staining: - Tapeworms we're stained in Aceto- carmine and Borax carmine. Specimens were kept overnight for staining. De-staining was done in 1% HCl. The composition of Acetoalum carmine was;

- Carmine 1 gm,
- Aluminum ammonium sulphate 3 gm,
- Distilled water 100 ml

Mounted in DPX (Dibutylphthalate Polystyrene Xylene) and the prepared slides were examined below 10x, 15x, and 45 x objectives to identify the Gastro-Intestinal Parasites of Local Chickens (*Gallus Gallus Domestica*). Then drawings are made with aid of camera lucida. All measurements are given in the millimeter [11].

Prevalence of Helminths Parasites

The prevalence of Helminths was recorded as per formula describe as

$$\text{Prevelnce} = \frac{\text{Total number of hosts infected}}{\text{Total number of hosts examined}} \times 100$$

Observation Table

Prevalence rate based on Variety of the chickens examined and on the sex of the local chicken examined.

Sex	No.of sample and variety examined(30 from each)	No.of infected	No.of uninfected	Prevalence(%)
Male and female variety of different breed of chicken.	Sample:Gavthi(local chicken).	29	01	96.66%
	Sample:Broiler chicken	16	14	53.33%
	Sample: R.R. chicken.	04	26	13.33%
Total		49	41	163.32

Chicken providing livelihood and income for miniscale farmers especially in the of cropping season, poultry combines very well with other husbandry activities like cropping. Chickens are the die each year because of various infections. Prevalence of gastrointestinal parasites is still much uncontrolled [12].

3. RESULT

In this study we find out the different species of parasite (A: Raillietina qudrtesticulata spp B. Raillietina cesticillus spp.) these shown in photo plates Plate I. this study gives the occurrence of parasitic infection, from the results of the studies on incidence of different types of helminthes infection it is clear that the Cestodes parasites are predominated during all the seasons. Higher incidence of Cestodes parasites may be due to conductive environment for growth of the parasites. The present study indicates that the occurrences of parasites are dependent on suitable environment which they require in its development. The prevalence of gastrointestinal parasites, the genera of helminths parasites, species and the sternness of infection also vary considerably depending on local environmental conditions such as humidity, temperature, rainfall, vegetation and management practices. Climatic conditions are responsible for the distribution and prevalence of the disease. It is well recognized that in resource poor regions of the world helminth infections of Chicken and goats are major factors responsible for economic losses through reduction in productivity and increased mortality[13,14]. The effect of climatic factors on helminthes have elaborately studied by[15,16,]. The considerable work on population dynamics were carried out by many authors, such as[17,18]. The study on population dynamics of helminth parasites of rats from Sangamner was done. The season, host, age and sex affect the distribution of endohelminths from *Catostomus commersoni* [19]. Helminth parasites made their impact on the livestock in the developing countries [20].

4. DISCUSSION

Sangamner chicken production is often described as a low input/low output poultry system and involved small flocks left scavenging around to obtain their food. Low productivity is mainly caused by the diseases including parasitic diseases, sub-optimal management, and the lack of supplement feed. 11 The result of this study showed a wide range of cystods and nematodes infections among village chickens in the study area. The finding of this study showed Similar reports have been documented from other parts of Maharashtra; An overall prevalence of 11% and 19 % were obtained from the Sangamner and Sangamner markets respectively. A number of prevalence studies on the nematode helminthes have been conducted on village chickens in different countries all over the world. Village chickens improve the nutritional status together with income of rural households and landless communitiesthrough the provision of meat and eggs. The chickens are also used for socio-cultural purposes [21]and have few social and religious taboos [22]. Gastrointestinal parasites remarkably lower chicken productivity and hence flock size [23]. The study also indicated that female had a higher prevalence than the male. However , the difference in prevalence in this study area might be attributed to the possible exposure of the chicken in the markets to contaminated feed and environment. Gastro-intestinal parasites are, however, the most prevalent and most devastating parasites affecting village chicken productivity[24]. There is therefore the need for further studies on epidemiology and economic significance of nematodes of village chickens under the traditional free range management system.

A: Raillietina aqudrtesticulata spp.

B:Raillietina cesticillus spp images.

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