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Seasonal Prevalence of Parasitic Helminths in Backyard Chicken in Kodad Region, Suryapet (Dt.), Telangana

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Abstract: ***The present study deals with the seasonal prevalence of helminth parasites in Gallusdomesticus at different seasons. The present study was cncentrated only on the prevalence cestode (Rallientina) and nematode (Ascaridia). The survey was conducted during, the annual cycle June 2012 to May 2013 from different sampling station to estimate the seasonal prevalence of parasitic helminths. For this study the population size (n=320) in kodad, suryapet district observed as 265 chicken were infected. A simple salt floatation method was employed for examination of parasitic helminths. The overall prevalence found 265 (82.81%) during the annual cycle. Which of these, nematode species of Ascaridiagalli, and cestode species of Rallientinatetragona reported. The seasonal prevaence of parasitic helminths was highest during summer (93.26%), followed by rainy (84.80%) and lowest during winter (71.30%). The average helminth parasites found in the domestic chicken were cestodes 86(26.77%), nematodes 123 (38.49%) and mixed infection 56 (17.15%). The percentage of seasonal prevalence of cestode (summer: 29.62Rainy: 26.60% and winter: 24.09%), nematode (summer: 41.16%, rainy: 38.22% and winter: 36.09%) and mixed infection (summer:20.36%, Rainy: 17.18% and winter: 14.85%). The results are discussed in relation to ecological parameters of parasitic helminths whose prevalence is found highest during summerfollowed by rainy and lowest during winter.***

Keywords: Domestic chicken, Parasitic helminths, nematodes, cestodes,seasonal prevalence, ecological parameters

1. Introduction

Intensive rising of poultry in commercial forms inevitably exposes flock to the various diseases which causes mortality and loss to the farmers. Diseased birds can also be hazardous to the human health; there may be possibilities of damage to the human body due to intake of diseased birds. In India, huge loss of birds due to disease is being faced by farmers due to management related problems. Poultry carry heavy infections of varied types of parasites, i.e, helminths, protozoans, viruses and arthropods etc. Intestinal parasitic helminths have a serious impact on poultry health, productivity, quality and quantity of meat.

Helminth parasites of poultry birds are commonly divided into three main groups, cestodes, nematodes and trematodes. The nematodes constitute the most important group of helmith parasites of poultry both in number of species and the extent of damage they cause: the main genera include *Ascaridia*, *Heterakis* and *capillaria*. Cestode species include *Rallientina*an*Cotrugonia*. Round worms are common in poultry, water fowl and wild birds. Species of roundworms that affect poultry include large roundworms also known as Ascarids, species of small roundworms Capillaria spp., also known as capillary worms or thread worms and caecal worms. Roundworms cause significant damage to the organs the infest. Most roundworms affect the digestive tract snd others affect the trachea and eyes. Most tapeworms are host specific, with chicken tapeworms affect only chicken. The tapeworm is responsible for stunted growth of young chicken, emaciation of adult and decreased egg production.

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 the parasites, resulting in dramatic changes in the prevalence and intensity of helminth infections(2). Many insects that may act as vectors for helminths are also favoured by high temperatures and to some extent humidity. These factors may explain the wide range and distribution of cestode and nematode species in poultry birds, especially during the tropical rainy season(3). Hence considering the economic importance of the disease caused by parasitic helminths in backyard chicken which inturn effect on total production causing high economic loss to the farmers as well as Nation too. Keeping in view the severity of the parasitic helminths a systematic wok has been undertaken to determine the overall and seasonal prevalence of the parasitic helminths.

2. Materials and Methods

The data for seasonal prevalence of the parasitic helminths is collected from backyard chicken procured from different parts of kodad region, of Suryapet district, Telangana. The survey was conducted during the annual cycle to determine the seasonal prevalene of parasitic helminths from different parts of Kodadregion, the samples were obtained from various household small poultry farms and market of poultry. The study area included different parts of kodad region there is a rainy season from June to September and a dry (Winter and Summer) season from October to May. For the present study backyard chicken in all seasons with more or less periodicity, under household management systems.

The chicken were sacrificed by cervical dislocation and the birds were examined according to Permin and Hansen(4). The chicken intestines were collected from slaughter throughout the year in season from different parts of kodad. The intestines of the chicken were brought to the laboratory for examination. To identify the gastrointestinal helminths, the whole digestive tract was removed carefully and sub divided into oesophagus, crop, proventriculus, gizzard, intestine, caeca and cloaca. All sections were opened longitudinally with a pair of scissors. After opening the intestine, the mucosa was scrapped and the pro ventricular

glands was squeezed with the help of fore ceps, simple salt flotation method was used and observed carefully for parasitic helminths. The helminth parasites were collected and fixed in fixatives for further processed for taxonomic study and their identification is carried out with the help of helminthological key described by Soulsby (5)(6).

The faecal samples were put into sample bottles and identified approximately. The samples were later processed in the laboratory using the salt flotation technique with saturated sodium chloride solution as the floating medium (7). Identification of helminths was done using standard microscope under X10 objective magnification (7) (8) (9).

The recorded data was analysed to derive prevalence of infection and intensity of helminth infection by using following formulae.

Definitions: The ecological terms used in this study are

$$\text{Prevalence} = \frac{\text{Total no. of hosts infected}}{\text{Total no. of hosts examined}} \times 100$$

$$\text{Mean intensity} = \frac{\text{Total no. parasites}}{\text{Total no. of hosts infected}}$$

$$\text{Relative Density or Abundance} = \frac{\text{Total no. of parasites}}{\text{Total no. of hosts examined}}$$

The above nomenclature is followed by that given by Morgolis et al.(9)

Data analysis: The most common measurements of parasite population levels in hosts are prevalence, mean intensity and mean abundance (10).

Helminth parasite dynamism in Fowl

Prevalence: A total of 320 fowl were examined during the present study which revealed 82.81% infection in kodad region. Two different helminth parasites recovered during the study include nematode (*Ascaridiagalli*) and one cestode *Rallientinatetragona*. Acaridiagalli showed a highest prevalence of 38.49% followed by Rallientinatetragona 26.77% and mixed infection 17.15%.

Table 1: Prevalence of helminth parasites collected from chicken in kodad region.

Host	Number examined	uninfected	infected	percentage	Trematodes	cestodes	Nematodes	Mixed inection
Fowl	320	55	265	82.81%	-	86(26.77%)	123(38.49%)	56(17.46%)

Table 2: Overall ecological parameters of Helminth parasitic infection in backyard chicken in kodad region during the annual cycle of 2012-2013

Season	Month	No. of fowl examined	No. and % of helminth parasites infected chicken	Seasonal % of parasitic helminths	No. and % of fowl infected with Cestodes	Seasonal % of cestode infection	No. and % of Fowl infected with Nematodes	Seasonal % of Nematode infection	No. and % of fowl with mixed infection	Seasonal % of mixed infection
Rainy	June	28	23(82.14)	84.8	8(28.57)	26.6	9(32.14)	38.22	4(14.28)	17.18
	July	26	22(84.61)		7(25.92)		10(38.46)		5(19.23)	
	August	26	23(88.46)		7(26.92)		11(42.30)		5(19.23)	
	September	25	21(84.0)		6(24)		10(40)		4(14.28)	
Winter	October	28	20(71.42)	71.3	7(25)	24.09	10(35.71)	36.09	4(14.28)	14.85
	November	27	21(77.77)		6(22.22)		11(40.74)		4(14.81)	
	December	27	17(62.96)		6(22.22)		9(33.33)		3(11.11)	
	January	26	19(73.07)		7(26.92)		9(34.61)		5(19.23)	
Summer	February	27	25(95.59)	93.26	9(33.33)	29.62	11(40.74)	41.16	7(25.92)	20.36
	March	27	25(92.59)		7(25.92)		11(40.74)		4(14.81)	
	April	26	25(92.30)		7(25.92)		12(46.15)		4(15.38)	
	May	27	25(92.59)		9(33.33)		10(37.03)		7(25.92)	
Total		320	265(82.81)	82.81	86(26.77)	26.77	123(38.49)	38.49	56(17.46)	17.46

3. Results and Discussions

The overall and seasonal percentage of prevalence of parasitic helminths in domestic chicken from kodad region during the annual cycle June 2012 to May 2013 is shown in Table-2. During the study period total 320 backyard chicken were randomly selected in all seasons from different parts of kodad region. These chicken from household poultry farms and market of poultry, autopsied them and the intestinswee brought to the laboratory and examined, out of 320 chicken, 265 (82.81%) were positive for parasitic helminths, showing the presence of helminth parasites in their intestines. Considering only the helminth infected chicken 265, a considerable difference was found in the prevalence of parasitic helminths among different seasons, with the highest value found in summer season 93.26% followed by rainy season 84.80% and lowest during winter season 71.30%. The backyard chicken ere found to have 86(26.77%) with cestode infection whereas 123(38.49%) with nematode infection and 56(17.46%) with mixed infection. There are no intestinal trematodes were detected. Based on the present study th survey conducted only on the prevalence of cestode and nematode infection particularly *Rallientina* and *Ascaridia* species respctively. It was observed tht the percentage of seasonal prevalence of cestode (summer: 29.62%, rainy season: 26.60% and winter: 24.09%), nematode (summer: 41.16%, rainy: 38.22% and winter 36.09%), and mixed infection (summer: 20.36%, rainy: 17.18% and winter: 14.85%)(Table:2). The overall and seasonal prevalence percentage of parasitic helminths was

highest during summer followed by rainy and lowest during the winter season.

As is evident from the observations made during the present study helminth parasites were prevalent throughout the year, but observations made in the present study show higher prevalence during the summer months followed by rainy and winter respectively. The present study revealed an overall prevalence of parasitic helminths 82.81% in kodad region. These findings are more or less ismilar to the other workers who reported the prevalence range in between 80.00%(6) to 90.00% such as Nigeria, 87.7%(5), Ethiopia, 89.5%(6), Morocco, 89.9%(7), and found higher than the report of 10.5% in Trinida(8), 41.4% in Ethiopia(9) and 53.00% in Nigeria (1), where as the present findings are lower than the report of 90.0% in India(10), and reports from other countries such as Ethiopia 91%(11), Kenya 90.78%(12) and 93.3%(13), Iran 96%(14), Jordan 91.6%915). The intensity of prevalence of parasitic helminths by the parasites varied from different regions and conditions. The higher prevalence observed during summer and lower during cold winters can be due to the impact of many factors like geographical locations of the area, environmental conditions prevailing in the area. Low temperature inhibits the development and survival of infective larval stages and as such decreases the access to intermediate hosts or final hosts. On the other hand, the enough availability of intermediate hosts, and favourable temperatures for larval development favours the chances of helminth proliferations in summer. It can be suggested that the seasonal fluctuations in the abundance of infective stages in the environment, individual host resistance and ecological parameters may also play a contributing role in the differences observed.

The present study also indicates that among all the helminths infected backyard chicken, where as nematodes infection was in 123 (38.49%), with 56 (17.46%) chicken showing mixed infection,bothcestode and nematode as compared to cestode has been reported in commercial layers in Pakisthan (16), and in Jordan(15) also.

4. Conclusion

The present study revealed that parasitic helminth is commonly found in backyard chicken in kodad region, suryapet district. The prevalence of parasitic helminths in relation to season was found highest during summer followed by rainy and lowest during winter season. Among these, *Ascaridiagalli*, is the most prevalent parasite affecting the health of chicken. This study revealed that parasitic helminths particularly cestode and nematode are highly prevalent in this region.

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