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Original Article

Study of Seasonal Incidence of Chicken Coccidiosis in Gangapur and Vaijapur Tehsil of Aurangabad District in Maharashtra

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ABSTRACT

The coccidia are the cause of coccidiosis, a disease of considerable importance in domestic animals. The discovery of several species causing extensive pathological damage and mortality in poultry, cattle, sheep, goat, pigs and several other animals have increased their importance. Coccidiosis causes a great economic loss in the poultry industry due to high rate of morbidity and mortality, sub optimal growth and conversion efficiency and loss of egg production. The present study showed that the broiler chicken in Gangapur and Vaijapur Tehsil of Aurangabad District in Maharashtra shows great occurrence of *Eimeria* in poultry. The Gangapur and Vaijapur talukas are come under low rain fall zone and poverty. So business point of view people are turn towards poultry, so to encouraging them we try to show overall scenario of coccidiosis in this region.The species occurring in broiler chicken in this region are as follows: - *Eimeria tenella, Eimeria necatrix, Eimeria brunetti*, *Eimeria acervulina, Eimeria maxima, Eimeria praecox, Eimeria mitis, Eimeria nikamae, Eimeria tarabaie* and *Eimeria shivpuri*

During the period of 8 months (Monsoon and Winter Season) i.e. from, June, 2013 – January 2014, total 704 faecal samples from Gangapur and 699samples from Vaijapur were examined for coccidial infections, out of which 254 samples from Gangapur and 251 samples from Vaijapur were positive respectively. The percentage of prevalence being 36.07% and 35.90% respectively. Comparative study shows minor differences in prevalence.

INTRODUCTION

India has one of the fastest growing economies in the world after the USA and China, with a GDP growth of 9.4% (2006/07). Over 72% of India's population lives in rural areas and of that, 58% depend on agriculture and associated activities for their livelihoods. Over the last two decades, agricultural growth barely exceeded 3% per year. Comparatively, the animal husbandry sub-sector within agriculture is showing good growth and poultry production has emerged as one of the key segments of the livestock economy. The total value of the

poultry sector is 162 billion rupees in 2005/06, which accounted for 10.5% of the total value of livestock output and 2.6% of the agricultural sector as a whole. More than three million people directly or indirectly depend on this sector for income and employment. (Poultry Total Economy 2008).

Poultry production systems in India are characterised by the simultaneous existence of the traditional extensive system of backyard production and the modern intensive system of production. In both the production systems, chickens are the most popular followed by ducks, accounting for more than 99 percent of the total poultry population. Other domesticated avian species like guinea fowls, geese, quails, pea fowls etc are used only for meat production and account for less than 1%. The poultry sector has grown from a backyard activity into a major commercial activity in four and half decades, but the backyard poultry sector of rural India still makes up 52% (2003) of the total fowl population and 6.2 % of ducks. This sector contributes 23% (2005-06) of the total eggs produced. There has been a significant change in the ownership and size of backyard poultry within the last decade and it declined by 7% between 1991 and 2003. (Poultry Total Economy 2008).

India‘s food basket is changing rapidly in favour of high-value food products, including animal products. Between 1993-1994 and 1999-2000, per capita consumption increased by 26% for milk and 29.7% for meat. The increase was most rapid for the consumption of poultry products; 82% for poultry meat and 50% for eggs. The expanding demand for livestock products is creating an opportunity for producers to enhance their income. Nevertheless, there is an apprehension in the sector, because the global trade in livestock products is highly distorted. Some developed countries provide huge support to livestock and poultry production, which adversely affects export prospects and poses a threat to domestic production. In the context of poultry, India is not a major player in global trade, either as an exporter or importer. (Poultry Total Economy 2008).

The poultry sector is growing at a much faster rate than any other element of the crop and livestock sector. Within the poultry sector, broiler production is growing faster than egg production. About 66.7% of the total output (in value form) from poultry is realized from the poultry meat sector and only 33.3% from egg production. **(**Basic Animal Husbandry statistics, 2006).

The protozoa are unicellular animals and the smallest of all animals. Most of them can only be seen under the microscope. They do breathe, move, and reproduce like multicellular animals. Some protozoans are harmful to man or other animals as they can cause serious diseases. In subkingdom protozoa coccidia is included in phylum Apicomplexa. The phylum Apicomplexa was established to include protozoans that possess a certain combination of structures collectively known as the apical complex which is distinguishable by electron microscopy[10,13].

Coccidia are microscopic, spore-forming, obligate, and intracellular parasites, which mean that they must live and reproduce within an animal cell, belonging to the class Sporozoea according to revised classification. The coccidia are the cause of coccidiosis, a disease of considerable importance in domestic animals, specially poultry, cattle, sheep, and goats. Coccidiosis is also important in wild animals, but seldom occurs in man. Coccidia have a complex life cycle and other unusual characteristics which have stimulated investigations by increasing numbers of biologist[8].

Poultry production in its general term includes the production of domesticated birds such as chicken, turkeys, ducks, geese and others, which are mainly kept for production of egg and meat. Among these, chicken are the most important species adapted globally to different ecological condition where humans live and contribute significantly in supply animal protein to improve human nutrition (EARO, 2000). Poultry birds are kept in backyards or commercial production systems in most areas of the world. Compared to a number of other livestock species, fewer social and religious taboos are related to the production, marketing, and consumption of poultry products. For these reasons, poultry products have become one of the most important protein sources for people throughout the world.

The coccidia have been one of the major groups of protozoa that have attracted attention in view of their importance. (S.V. Nikam 1982) The first species of coccidia was described in 1870. There has been a progressively increasing realization of their importance. The discovery of several species causing extensive pathological damage and mortality in poultry, cattle, sheep, goat, pigs and several other animals have increased their importance[11].

There have been several contributions on the coccidia from different part of the world and in India. In recent times, there is a great flood of publications particularly on the *Toxoplasma* and related organisms. However a major part of these contributions have come from few centres of research in advanced countries which have the advantages of modern techniques and sophisticated instrumentation. In several other areas even basic information on the systematics and prevalence of chicken coccidia is not available[13].

MATERIAL AND METHODS

During the course of present investigation, an extensive survey was carried out to record the incidence of coccidia in broiler chicken particularly In Gangapur and Vaijapur Tehsil of Aurangabad District in Maharashtra. For this study intestine of broiler chicken from different localities and were examined for coccidial infections. The birds (broiler chicken) were sacrificed and various parts of the alimentary canal and caeca were examined. The faecal contents were diluted with water and sieved to remove the large faecal debris, after repeated washing the oocysts were concentrated by centrifugation at 3000 rpm for ten minutes. The oocysts were then spread out in shallow petridishes and covered with 2.5% potassium dichromate solution for sporulation. Care was taken to aerate them properly and also to prevent desiccation. The sporulation was carried out in all cases at room temperature (about 28 to 32 0^0c)[10-13].

RESULTS AND DISCUSSION

During the period of 8 months (Monsoon and Winter Season) i.e. from, June, 2013 – January 2014, total 704 faecal samples from Gangapur and 699samples from Vaijapur were examined for coccidial infections, out of which 254 samples from Gangapur and 251 samples from Vaijapur were positive respectively. The percentage of prevalence being 36.07% and 35.90% respectively. Comparative study shows minor differences in prevalence. Comparative study shows that maximum prevalence is in Gangapur (36.07%) than Vaijapur (35.90%).

Month wise analysis in Gangapur showed that maximum prevalence was during June (63.10%), followed by July, Sep ,Nov., Dec., Aug, Oct, and Jan. (54.54%, 34.21%, 34.72%, 27.66%, 25.51%,20.10%, and 17.52). (Table No.1).

Month wise analysis in Vaijapur showed that maximum prevalence was during June (60.90%), followed by Aug, July, Sep, Dec, Oct, Nov. Jan. (57.14%, 46.66%, 31.37%, 19.51%, 17.14%, 16.66%, 15.00%). (Table No.2)

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Table 1. Showing the percentage prevalence of chicken coccidiosis in Gangapur tehsil during June 2013 – January 2014

Period	No. of samples		% Prevalence
	No. of sample examined	No. of sample positive	
June 2013	103	65	63.10
July 2013	110	60	54.54
August 2013	98	25	25.51
September 2013	114	39	34.21
October 2013	50	10	20.10
November 2013	72	25	34.72
December 2013	60	13	27.66
January 2014	97	17	17.52

Table 2. Showing the percentage prevalence of chicken coccidiosis in Vaijapur tehsil during June 2013 – January 2014

Period	No. of samples		% Prevalence
	No. of sample examined	No. of sample positive	
June 2013	110	67	60.90
July 2013	90	42	46.66
August 2013	105	60	57.14
September 2013	102	32	31.37
October 2013	70	12	17.14
November 2013	60	10	16.66
December 2013	82	16	19.51
January 2014	80	12	15.00

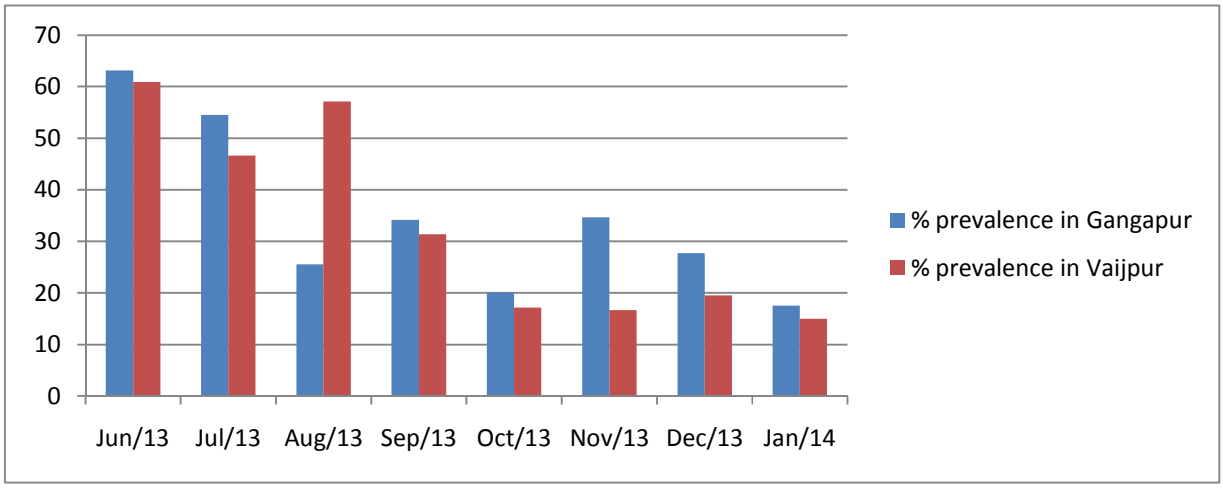

Figure 1. Showing the percentage prevalence of chicken Coccidiosis in Gangapur and Vaijapur tehsil during June 2013 – January 2014