Original Article

Prevalence of Eimeria oocysts in Grass Litter (OPG) oocysts of Broiler chickens in Mahabad city

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Abstract

Coccidiosis is one of the most common diseases in the poultry industry in most parts of the world, caused by a protozoan Eimeria. This study aimed to investigate the frequency of Eimeria oocysts in warm litter (OPG) oocysts of broiler chickens in Mahabad city. Due to the distribution and abundance of poultry in Mahabad region, 5 units were randomly selected and sampled at the regional level. The poultry age selected for sampling was between 1 and 6 weeks. The basis for the detection of coccidial contamination was to identify the presence of Eimeria oocysts in the poultry litter. Samples were taken from each litter of drinkers and dunkers to prepare a complete sample that showed contamination of the whole bed with a low percentage of sampling error. The samples were then taken from the bed around the breweries to a distance of 4 meters, approximately 30-40 grams of the bed sample, and poured into a separate cleaner. Litter samples were also collected around the densities at a distance of 5 meters across the hall on both sides of the hall and were thrown into the corresponding container. For oocyst spray, 30 cc bicarbonate was added 2.5% to 5 g of feces and incubated at 28 ° C. Then the culture medium was stirred once every 12 hours and aerated with a pet paste. The findings of this study showed that most salons had the highest number of oocysts recorded in the fourth week. By comparing the total number of oocysts with dunkeries and drinkers, it can be seen that the number of oocysts around drinkers in all weeks was higher than dunkers.

Keywords: Eimeria oocyst (OPG), Broiler chick oocyst, Mahabad city

Introduction

The increasing human population and the scarcity of natural resources, on the one hand, and human attention to the quality of life, on the other hand, have called for deep thinking and a great challenge to nature. The issue of nutrition and nutrition needs is of particular importance since nutrition needs have been one of the primary but fundamental goals of humans for many years. A society that cannot meet the majority of its nutritional needs will never be able to succeed in other scientific and industrial areas, and even in the importance of nutritional needs, as long as the independence and territorial integrity of a given country will be sustained [1-3]. For this reason, to meet the nutritional needs of the global population, today certain scientific techniques and techniques have replaced the traditional methods of agriculture and livestock, and in fact, we are witnessing the replacement of industry with tradition in agriculture and livestock. An important feature of the livestock industry is the increasing livestock and poultry density in new farms as well as the efficient and reasonable use of agricultural inputs. Applying specific scientific management to these farms and striving to improve the feed conversion rate and accelerate the growth of livestock and livestock are other characteristics of the industry. But this rapid increase in production efficiency and change in the natural system of livestock breeding will never be without cost, the rapid spread of diseases and the emergence of metabolic disorders, and the observation of a variety of syndromes from the effects of industrial livestock breeding. Some diseases, such as coccidiosis, are of particular importance because reflecting the disease annually causes millions of dollars in damage to the livestock sector worldwide. According to the above description, it is essential to identify, treat, and combat animal diseases and diseases, and the management of livestock farms should be sufficiently aware of these diseases [4, 5]. Since dense and industrial poultry farming has been considered, there has been an increase in coccidiosis damages in poultry flocks. Worldwide, the damage caused by this damage is estimated at $ 900 million to $ 1 billion [6]. The disease is densely dependent on how the poultry is raised so that the rate of the disease increases when a large number of susceptible young birds are placed in an environment conducive to the growth and reproduction of coccidia [7]. Coccidiosis is produced by

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How to cite this article: Keyhanazar, K. Prevalence of Eimeria oocysts in Grass Litter (OPG) oocysts of Broiler chickens in Mahabad city. Arch Pharma Pract 2020;11(S1):92-7.

the protozoa of the apicomplexan branch, which has a direct evolutionary pathway, with no host-mediated, transmitted by resistant oocysts and propagated within the host body of the parasite within the intestinal epithelial cells [8-10]. Most of the bird coccidia belong to the genus Imria. Imrimas are abundant in nature, but the disease occurs when too many birds of the same species are kept locally, and this causes a large number of imimara to be capable of causing disease, so coccidiosis is a major concern in the widespread and intensive poultry farming. [1]

Despite the dense and industrial poultry industry today, coccidiosis has also been recognized as one of the most economically important diseases. Despite many advances in the prevention and treatment of coccidiosis over the past 5 years, the disease is still one of the major causes of injury and injury in the poultry industry [12]. As the poultry industry expands and the number of primary medicines is eliminated, newer methods of prevention and the use of more effective medicines to treat and ultimately improve poultry management and the use of new management tools to control coccidiosis and reduce inevitable waste are needed. Be it. In dense poultry breeding, oocytes rapidly proliferate in the litter, and contact of the chicken and the introduction of large numbers of oocytes into the gastrointestinal tract and intestine cause clinical coccidiosis in poultry. The number of oocytes per unit area is low, so introducing fewer oocytes into the gastrointestinal tract not only causes clinical coccidiosis but also creates immunity against the disease. So by applying or using effective management tools that Reduce the number of oocytes in the bed in addition to preventing clinical disease. The herd will become infected, but the flock will gradually become immune to the disease [13, 14]. Researchers have been able to identify this basic principle, the mechanism of how to build immunity against coccidiosis only after decades of research [3, 7, 15, 16]. Since oocytes can be found wherever poultry is raised, it is impossible to control the disease or free the poultry from one area of the oocyte.

Materials and Methods

- Poultry understudy

The distribution of poultry farms in Mahabad city was almost uniform and most of them were outside the urban area which was less affected by chemical and noise pollution due to permitted distance from roads due to the development of poultry industry and especially poultry. In this meaty city, most units are not designed with the proper construction and management principles in place to continue to improve conditions. In addition to the individual poultry farms, Mahabad Agricultural and Complex Poultry farms include breeding hens, broilers, and hatcheries around Mahabad. The complex was also sampled in this broiler breeding hall from October 2011 to December 2011. The characteristics of the poultry units under study are presented in Table 1.

Table 1: Specifications of poultry understudy

Description	title
This poultry farm is located 20 kilometers from the Mahabad-Miandoab road and has 18 halls in total, sampled from a single farm with a capacity of 12,000 in the autumn of 2011. The drink system and feeders were automatic and the feed was prepared from the Mahabad livestock feed plant. Health and management issues were respected.	**Poultry A (Mahabad Agricultural Poultry Industry)**
This poultry farm is located 10 kilometers from the Mahabad-Orumiyeh Road, with 12,000 parcels that previously had coccidiosis and used anti-coccidiosis drugs Lasalocid and Amprolium. This poultry unit had a mixing machine for making donuts and used as a litter for the salon. Lime was also used as a disinfectant at the entrance doors.	**Poultry B**
This poultry farm is located 5 kilometers from Mahabad and is located near the livestock feeder with a capacity of 10,000 pieces. Its feeder system was a chain trough and its feeder system was automatic and conical hung. Its water supply system was leaking in some places due to obsolescence and the bed linen was not evenly distributed. Don's warehouse and mixer were in the vicinity of the poultry farm, and because of its former history, the cloxidol antioxidant compound was used at a ratio of 500 g / ton.	**Poultry C**
This poultry farm is located 5 km from Mahabad-Miandoab Road with a capacity of 8000 pieces. The digging system and its drinking system were automatic (graph feeding system - Naples drinking system). The bed linen was uniform and the ventilation was carefully installed. The health standards were fully complied with and salinomycin was used to prevent coccidiosis.	**Poultry D**
This poultry farm was located in a homestead with a production capacity of 12,000 units. Its health and management principles resembled poultry C, and lasalocid was used.	**Poultry E**

- Sampling method

Due to the distribution and abundance of poultry in Mahabad region, 5 units were randomly selected and sampled at the regional level. The poultry age selected for sampling was between 1 and 6 weeks. The basis for the detection of coccidial contamination was to identify the presence of Eimeria oocysts in the poultry litter. Sampling was performed as follows to obtain a complete sample that indicates contamination of the whole bed with a low percentage of sampling error:

Samples were taken from each litter of drinkers and dunkers. The samples were then taken from the bed around the breweries to a distance of 4 meters, approximately 30-40

grams of the bed sample, and poured into a separate cleaner. Litter samples were also collected around the densities at a distance of 5 meters across the hall on both sides of the hall and were thrown into the corresponding container. At the end of each sample, the drinkers and dunkers weighed 2–5 kg. Samples were taken to have a sampling point opposite the drainage and drainage site. Samples were taken weekly during the study period. A total of 60 litter samples were collected from each poultry unit.

- Method

Shader Floating Method

After sampling from broiler farms in Mahabad city, substrate samples were examined for the presence of oocysts of different Eimeria species.

Aimeria oocyst search method

First, the substrate samples were mixed separately and 9 g of it was poured into a 300 ml sanding glass jar and 126 ml of water was added to it with glass balls. The bed was thoroughly mixed and soaked. Disrupted the specimen to completely separate the bed and stool components by shotguns. The sample was then filtered through a 100 sieve and poured into a Clinton Lane tube with a 15 ml suspension. After centrifugation (1500 rpm for three minutes), the supernatant was discarded, and saturated sugar was added to it to give a convex surface at the test tube opening. A lamellar was placed vertically on it and centrifuged again at 1000 rpm for 3 minutes. The lamellae were then gently removed from the surface of the tube and placed on a slide using a light microscope at a magnification of 100 X, oocysts were counted throughout the lamellar surface. The counted oocysts showed the number of oocysts in one gram of feces (OPG) calculated using the following formula (Islamic, 2006).

OPG = 100 * (1/6 total counted oocysts + total counted oocysts)

Spray oocysts

For oocyst spray, 30 cc bicarbonate was added 2.5% to 5 g of feces and incubated at 28 ° C.

Then the culture medium was stirred once every 12 hours and aerated with a pet paste. The specimens were monitored every 6 to 12 h for oocyst spraying, with the pipette being removed from the culture medium and a drop of solution placed on the slide and magnified under a magnifying microscope. The 100 oocysts were examined for sporulation (formation of intracellular sporocysts) and recorded if its time was positive. When 50% of total oocytes were sporulated, it was considered as sporulation time. Sporulation time, size, color, shape, and shape of the oocyst wall, presence or absence of aperture, size of sporocysts, oocysts residue, polar grain, and other criteria used to identify different Eimeria species. The size of the oocysts was determined using a micrometer lens in terms of the length and width of the oocyst in microns and with the help of other features, the Eimeria species were identified.

Results

The findings of this study are shown in Tables 2 to 6, with the highest level of contamination in E poultry farms. Also, in most salons, the highest number of oocysts was recorded in the fourth week.

Table 2: Evaluation of Eimeria oocysts in Gram Litter (OPG) of poultry broilers A in Mahabad

The sum of the total bed oocysts	OPG		**Sampling Time (Week)**
	water	Drinking	
0	0	0	**1**
0	0	0	**2**
42	5	37	**3**
189	125	64	**4**
129	84	45	**5**
117	74	43	**6**
477	288	189	**Total**

Table 3: Evaluation of Eimeria oocysts in Gram Litter (OPG) of poultry broilers B in Mahabad

The sum of the total bed oocysts	OPG		**Sampling Time (Week)**
	water	Drinking	
0	0	0	**1**
0	0	0	**2**

274	154	120	**3**
886	454	432	**4**
397	210	187	**5**
402	214	198	**6**
1967	1032	937	**Total**

Table 4: Evaluation of Eimeria oocysts in Gram Litter (OPG) of poultry broilers C in Mahabad

The sum of the total bed oocysts	OPG		**Sampling Time (Week)**
	water	Drinking	
0	0	0	**1**
57	30	27	**2**
431	221	210	**3**
2329	1270	1059	**4**
1796	951	845	**5**
1653	845	808	**6**
6266	3317	2949	**Total**

Table 5: Evaluation of Eimeria oocysts in Gram Litter (OPG) of poultry broilers D in Mahabad

The sum of the total bed oocysts	OPG		**Sampling Time (Week)**
	water	Drinking	
32	18	14	**1**
484	326	158	**2**
840	520	320	**3**
1467	842	625	**4**
1083	542	541	**5**
1080	570	510	**6**
4986	2818	2168	**Total**

Table 6: Evaluation of Eimeria oocysts in Gram Litter (OPG) of poultry broilers E in Mahabad

The sum of the total bed oocysts	OPG		**Sampling Time (Week)**
	water	Drinking	
0	0	0	**1**
484	326	158	**2**
747	482	265	**3**
1504	789	715	**4**

1341	726	615	**5**
4076	2323	1753	**6**
8152	4646	3506	**Total**

Figure 1: Eimeria oocyst in poultry bed Meat studied (magnification 400 x)

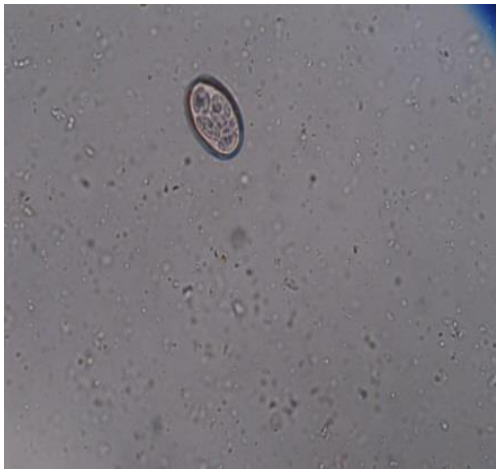

Figure 2: Eimeria sprayed oocysts in studied farms (magnification 1000 x

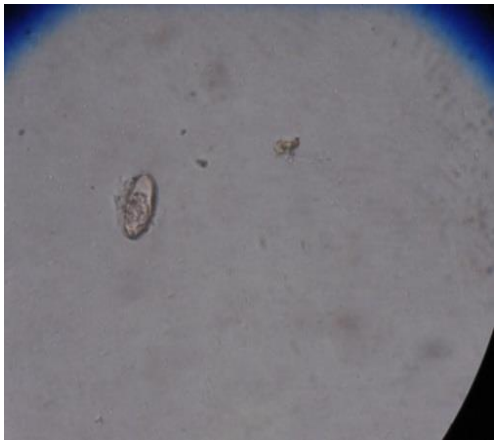

Figure 3: Non-sporulated Eimeria oocysts around poultry feeder (magnification 1000%).

Discussion and Conclusion

Since the advent of antioxidant drugs for the control and treatment of coccidiosis, drug resistance and its subclinical form have always been discussed. Different methods have been proposed to deal with subclinical coccidiosis and its adverse effects have been identified to some extent. One of the major problems with this type of disease in poultry is the identification and identification of its causative agents.

Studies in the Netherlands and elsewhere in the world suggest that subclinical coccidiosis affects production indices in approximately 10% of the world's broiler population [1].

In Long et al.'s (1975) study, in 47 salmon broilers, the average number of oocysts (37,000) was reached in 4-5 weeks, and the number of oocysts decreased rapidly. Given that the highest number of oocysts in the study was in the fourth and fifth weeks, this finding was consistent with previous studies in broiler farms in Mahabad.

The number of oocysts in this study was significantly lower than the findings in Long et al. One of the reasons for this difference is the effect of antioxidant drugs used on oocyst production and excretion, resulting in a decrease in the population of this parasite in the bed. Also, adherence to health principles in poultry farms and the use of anti-coccidiosis drugs in poultry farms reduced mortality in broilers (less than 8%).

(1993) showed that the maximum number of oocysts in commercial broiler chickens is at the age of 4-5 weeks, followed by a decrease in the number of oocysts, in which the number of oocysts in the weeks after the fourth week was also increased. In most cases, they decrease.

In poultry A, the highest number of oocysts was isolated in the fourth week and the number of oocysts around the drinker was higher than that of the ducklings, but there was no significant difference ($P < 0.05$). But clinically, this difference may be due to the increased moisture in the areas. After the fourth week, the number of oocysts declined in this poultry unit compared to the other poultry under study, with the lowest oocyst content in the substrate compared to other poultry farms, indicating strong management of this poultry unit.

By comparing the total number of oocysts beside Dunkhuri and the drinkers in this poultry, it can be seen that the number of oocysts around the drinkers was higher than Dunkhuri in all weeks. Therefore, to control and prevent coccidiosis in this area, the drugs used should be replaced and a new drug with a greater range of effects (rotational therapy) should be used.

Given that the highest prevalence of the infection is from the fourth week, anti-coccidiosis medications can be partially prevented from the beginning of the third week.

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