Original Article

Evaluation of oocyte changes around dankhoras and drinkers at different weeks in poultry farms of Mahabad

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ABSTRACT

Over the years, the results of studies on the use of disinfectant chemicals to control coccidiosis have been promising, and oocysts have been shown to be resistant to commonly known disinfectants. Some iodine compounds kill oocysts, but their contact time and concentration are longer than those commonly encountered in poultry nests by oocysts. Therefore, in this study, we investigated the rate of oocyst changes around densities and drinkers at different weeks in poultry farms of 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 indicates contamination of the entire bed with a low percentage of sampling error. 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 results of this study showed that despite the use of anti-coccidiosis drugs, this parasite is still prevalent among broilers and is one of the major problems in farmland in the region. , Substrate including moisture, Eimeria spruce shape remains longer in the substrate and thus may be a factor for dispersal and propagation of oocysts among different farms.

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

Introduction

Imria is a protozoan intracellular parasite and the causative agent of coccidiosis. Coccidiosis is an important disease in the poultry industry, which mainly has two forms (clinical) and subclinical (subclinical). Clinical signs, severity, and lesions due to coccidiosis vary, and are often undetectable because many infections are subclinical and are not addressed by ranchers and veterinarians [1-3]. The clinical form of coccidiosis causes severe lesions in broiler, laying, laying mother, broiling mother, broiling ancestors and laying ancestors. These protozoa proliferate in the intestinal tract and cause tissue damage resulting in malfunctioning of nutrition, digestive and food absorption processes, dehydration, blood loss and increased readiness to receive other pathogens. Also in broiler poultry, even its subclinical form causes a decrease, feed conversion ratio and weight gain of poultry and chickens. The most important symptom is enteritis and the parasite is mainly a disease of young animals [3].

It is one of the most important growth restricting factors in the poultry industry. Only after the sulphanamide family drugs were manufactured did it become possible to grow poultry on a more commercially viable basis [2]. By the early 1940s, poultry farmers had to keep poultry on wired floor or have to suffer losses. Heavy illnesses were born after poultry farmed on the bed. Half a century later, it was partially controlled using a variety of chemical drugs and the use of appropriate management techniques for coccidiosis [4-6].

In industrialized countries, disease-related mortality is not a major issue, but rather the negative impact of the disease on food conversion efficiency, pigment reduction, and the reduction in

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profit [1]. In developing countries, which have limited access to sources of disease diagnosis, access to anti-coccidiosis drugs and new management approaches, coccidiosis is the leading cause of mortality and a negative impact on poultry growth [7]. Eimerias are predominantly intestinal parasites of the gastrointestinal tract and intestines, but are also found in other organs such as the kidneys. Each type of imria is replaced in a specific location by the intestinal tract such as cecum, duodenum, ileum, etc. [8-10]. Some of these sites invade different areas of the intestine, such as villus epithelial cells, Liebknohen caves, and even mucosal cells. The location of the parasites within the host cell also varies, with some species located above the host cell nucleus, some below it, and even in some species some parasites within the host cell nucleus. Some species contribute to the size of the host cell to some extent, and some enlarge it, as well as the size of the host cell. Even if they are not attacked, the location of the parasites' replacement depends on the genetics of each species [11-13]. Coccidiosis is found almost everywhere in chicken and breeding grounds, so Coccidiosis exists in all countries around the world. However, herd depletion, lack of improvement and hygiene of the environment, and bed moisture increase the likelihood of an outbreak.

A very high percentage of positive herds from Europe have been reported, in addition to surveys conducted in North and South America, indicating that coccidia are present in almost all broiler farms [3, 14]. Although coccidioidosis occurs in all domestic and wild birds, it is highly specific in any bird that does not cause disease in the other species, so wild birds are eliminated as sources of contamination [15] and thus are the most common intermediates for the propagation of coccidia. They are mechanical factors [16]. This is done by people moving between farms.

The disease is most commonly seen in 3-6 weeks of age and rarely occurs in herds less than 3 weeks old [17]. The self-limiting phenomenon of coccidial infections among chickens and other birds is well known. There is no cross-immunity phenomenon among different species of Coccidia, and it is likely that Coccidia is spread by different species in several stages [18].

There is an interaction between herd immunity acquired by mild infections (without clinical signs) and an increase in the parasite population. Immunity usually occurs without clinical signs and oocyte production is reduced and the oocyte population in the bed rapidly declines [19]. Obviously, before immunity in birds, the number of oocysts in the substrate increases rapidly due to the short pre-emergence and bioavailability of parasites. Specific management practices in relation to thick bedding provide the best heat and moisture conditions for oocyst hatching, and if the density is in excess, heavy contamination will occur. However, oocyst spotting can occur in the stool within two days. The oocysts have remarkable bioenergy and can persist for many years, and there is also evidence that the life cycle of certain coccidia during development in the schizogonic stage may be delayed or stopped, but after several months with shedding. Subsequent oocysts have resumed development and could thus play an important role in the epidemiology of coccidiosis.

The number of casualties in winter coccidiosis below 2 months that have not previously been treated with Eimeria and have been suddenly exposed to severe infection is low. Most coccidiosis occurs in poultry in less than three weeks [20]. In some cases it has been observed that infected poultry may be 100 g lighter than the control (healthy poultry) at slaughter. With a bit of reflection and mathematical calculations we can see the extent of weight loss created. For example, in a 20,000-poultry farm in the event of a disease, at least 30% of the 6,000,000 birds will be affected. If we lose an average weight of 100 g per bird, we will have a 600 kg reduction in production over a period of time. It is about 2% of total production. The extent of the lesions caused by this disease depends on the time it occurs, ie if the chickens become infected during the critical period of life (5 - 3 weeks), in the post-disease period until slaughter, production losses, non Will be compensated. The cause of the disease is the growth process and the reduction of feed conversion efficiency in broiler chickens, invasion of Eimeria in the tissues below the intestinal epithelium and extensive destruction of the intestinal wall and bleeding and loss of body fluid and protein [20]. Because subclinical coccidiosis is usually symptomatic, the only way to diagnose it is to use laboratory methods, but not all methods used to confirm coccidiosis are necessarily appropriate for the diagnosis of subclinical coccidiosis.

Materials and Methods

Poultry under study

The distribution of poultry farms in Mahabad city was almost uniform and most of them were outside the urban area which were 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. . Samples were collected from the broiler breeding hall of this complex during October 2011 to December 2011. The characteristics of the poultry units under study are presented in Table 1.

Table 1: Specifications of poultry under study

title	Description
Poultry A (Mahabad Agricultural Poultry Industry)	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 B	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.	
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 Cliton 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. [1].

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, oocystic 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 Charts 1 to 7. The number of oocysts counted in the vicinity of the drinkers was higher than that of the ducklings and the lowest number of oocysts was in the first and second weeks of the breeding season, except in poultry D where the number of bed oocysts was zero in the first week.

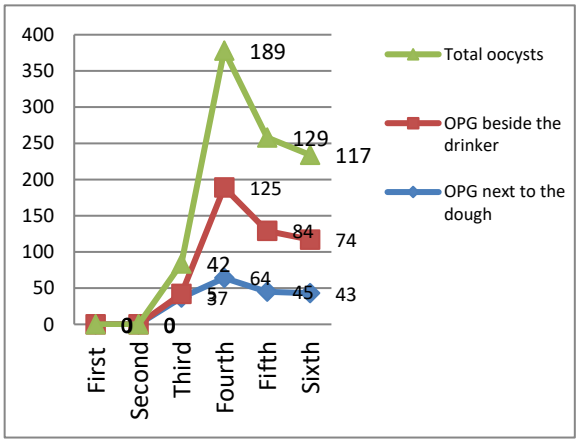

Chart 1: The amount of oocysts alongside the drinkers and dunkers and total oocysts in poultry A

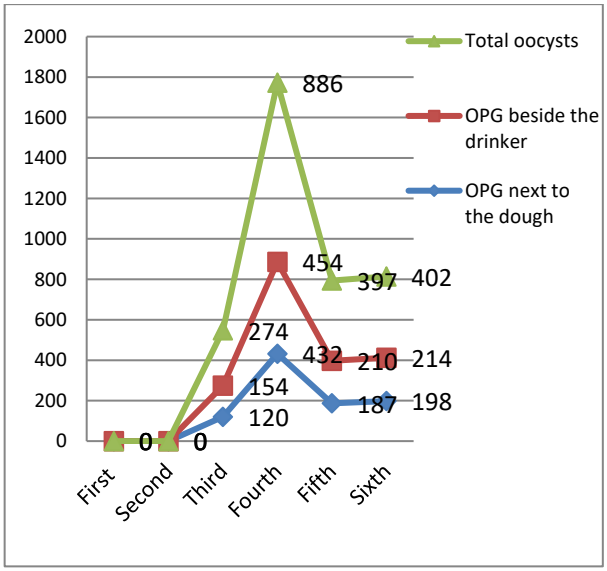

Chart 2: The amount of oocysts alongside the drinkers and dunkers and the total oocysts in poultry B

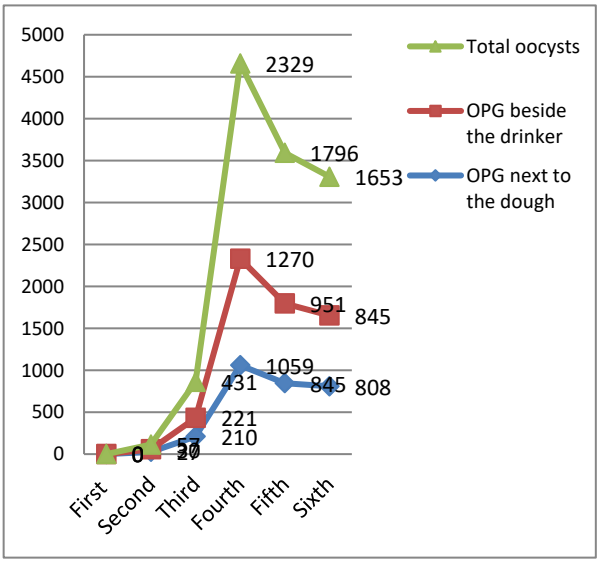

Chart 3: The amount of oocysts alongside the drinkers and dunkers and the total oocysts in poultry C

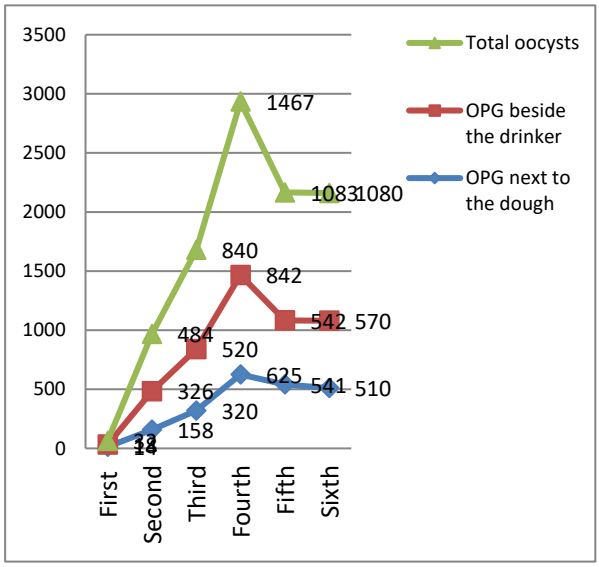

Diagram 4: The amount of oocysts alongside drinkers and dunkers and total oocysts in poultry D

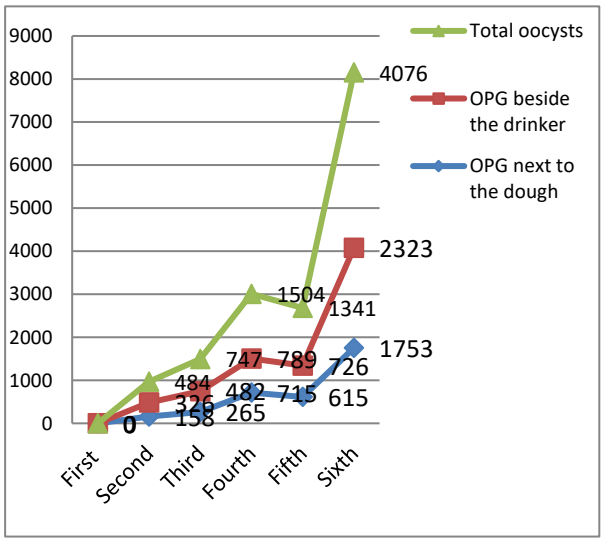

Chart 5: The amount of oocysts alongside the drinkers and dunkers and total oocysts in poultry E

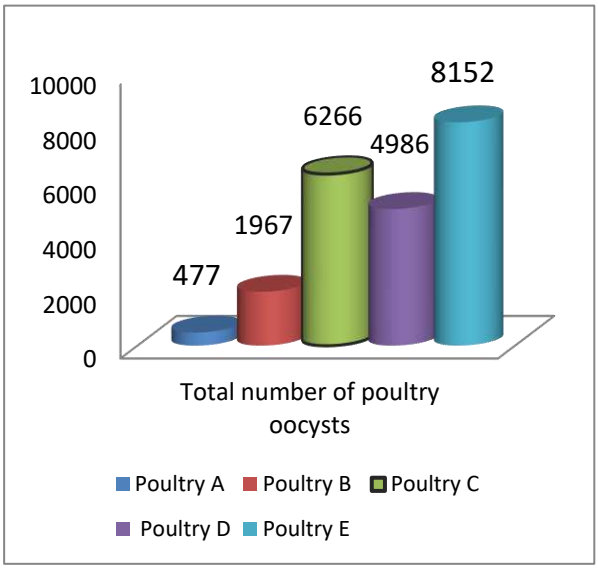

Figure 6: Survey of poultry based on total oocysts counted over 6 weeks

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.

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.

Poultry B had the highest number of oocysts as poultry A in the fourth week and the number of oocysts was higher in the drinking water than in the docking house ($P < 0.05$). After the fourth week, the number of oocysts decreased, and from the fifth to the last week the oocyst production was almost the same, indicating the effect of anti-coccidiosis drugs. By comparing the total number of oocysts beside Dunkhuri and the drinkers in this poultry, it can also be seen that in all weeks the amount of oocysts around the drinkers was higher than the dunkers.

The highest rate of oocyst excretion in the fourth week was related to poultry C, indicating weakness in the aquifer system with high water loss and consequently greater prevalence of coccidiosis around the estuary.

In poultry D, as in poultry B after the fourth week and from the fifth to the end of production, the number of oocysts was almost constant on the bed, which is a confirmation of the findings in previous studies. The number of oocysts was recorded, probably due to a surplus of poultry in this parcel, as this poultry had the highest number of oocysts compared to other poultry.

The results of this study showed that despite the use of anti-coccidiosis drugs, this parasite is still prevalent among broilers and is one of the major problems in farmland in the region. , Substrate including moisture, Eimeria spruce shape remains longer in the substrate and thus may be a factor for dispersal and propagation of oocysts among different farms.

References

1. Islamic, AS., Hosseini, S.H. Investigation and analysis of cattle parasitic infections in farms around Tehran: Journal of Tehran Veterinary School. 1989; 44(3).
2. Glacier, M., Jalilzadeh, A.H. Evaluation of Coccidial Factors of Rabbit (New Zealand White Breed) at Urmia University Laboratory of Animal Laboratories, pages 90-95. (Journal of Research and Construction).
3. Altman, R. B., Clubb, S. L., Dorrestein, G. M., Quesenberry, K. E. (eds). Avian Medicine and Surgery, 1997; p.1021. W. B. Saunders.
4. Cornelissen, H., Ducatelle, R., Roels, S. Successful treatment of a channel-billed toucan (Ramphastosvitellinus) with iron storage disease by chelation therapy: sequential monitoring of the iron content of the liver during the treatment period by quantitative chemical and image analyses. J. Avian Med. Surg., 1995; 9, 131–7.
5. Dorrestein, G. M. Diagnostic necropsy and pathology; avian cytology. In: Avian Medicine and Surgery (R. B. Altman, S. L. Clubb, G. M. Dorrestein and K. E.Quesenberry, eds), 1997b; pp. 158–69; 211–22. W. B. Saunders.
6. Dorrestein, G. M., Schrijver, J. A genetic defect in the vitamin A metabolism in recessive white canaries. Tijdschr. v. Diergeneesk, 1982; 107, 795–9.
7. Dorrestein, G. M., Van Der Hage, M. H. Veterinary problems in mynah birds. In: Proc. AAV, Houston, pp. 263–74. Association of Avian Veterinarians, 1988.
8. Dorrestein GM, Grinwis GM, Dominguez L, Van de Jagt E, Beynen AC. An induced iron storage disease syndrome in doves and pigeons: a model for hemochromatosis in mynah birds. InProc Annu Conf Assoc Avian Vet 1992 (pp. 108-112).
9. Dorrestein GM, Van der Horst HH, Cremers HJ, Van der Hage M. Quill mite (Dermoglyphus passerinus) infestation of canaries (Serinus canaria): Diagnosis and treatment. Avian Pathology. 1997 Mar 1;26(1):195-9.
10. Dorrestein GM, Van Der Hage M, Fuchs A, Baeza Cuerel J, Kik MM, Wagenaar F, Pol JM, Van Der Horst H. A coronavirus-like virus infection in canaries (Serinus canaria): Pathology and diagnosis. Tagung Uber Vogelkrankheiten. 1998:110-9.
11. Dublin A, Mechani S, Malkinson M. A 4-year survey of the distribution of Chlamydia psittaci in 19 orders of birds in Israel with emphasis on seasonal variability. InProceedings of the 3rd European conference of the Association of Avian Veterinarians. Israel 1995 (p. 1).
12. Fischer, J. R., Converse, K. A. Overview of conjunctivitis in house finches in the eastern United States, 1994–1995.
13. Fitzgerald SD, Sullivan JM, Everson RJ. Suspected ethanol toxicosis in two wild cedar waxwings. Avian Diseases. 1990 Apr 1:488-90.
14. Goldsmith, T. Documentation of passerine circoviral infection. In: Proc. Main Conf. AAV, 1995: 349–50. Association of Avian Veterinarians.
15. KLASING, K. C. Vitamins. In: Comparative Avian Nutrition (K. C. Klasing, ed.), 1998: 277–329. Cab International.
16. Mashima TY, Ley DH, Stoskopf MK. Evaluation of treatment of Mycoplasma gallisepticum-associated conjunctivitis in house finches (Carpodacus mexicanus). J Avian Med Surg. 1997;11:20-4.
17. Pohl U. Chlamydia psittaci in Austrian wild birds. InProceedings of the 3rd European conference of the Association of Avian Veterinarians. Israel 1995 (pp. 15-17).
18. Suedmeyer WK, Haynes N, Roberts D. Clinical management of endoventricular mycoses in a group of African finches. InProc Assoc Avian Vet 1997 Sep 10 (pp. 225-227).

19. Tscherner W, Wittstatt U, Göltenboth R. Geopetitia aspiculata Webster, 1971 ein pathogener Nematode tropischer Voegel in Zoologischen Gaerten. Zoologische Garten. 1997;67:108-20.

20. Vereecken M, De Herdt P, Charlier G, Thoonen H, Ducatelle R. An outbreak of polyomavirus infection in Shama's (Copsychus malabaricus). TAGUNG UBER VOGELKRANKHEITEN. 1998:176-83.