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Article *in* Kufa Journal For Veterinary Medical Sciences · June 2015

DOI: 10.36326/kjvs/2015/v6i14024

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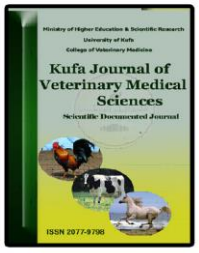

Treatment of natural infection in pigeons birds with coccidiosis by using ginger extract in Babylon province

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Extracts:

Twenty-five sample pigeon faeces were examined to detect the prevalence of natural infection of coccidiosis among these birds. Out of 25 pigeons examined , 21 birds were found infected (84%) , 12 infected pigeons were males (85.7%) and 9 were female (81.8%).

Flotation by zinc sulphate was the best method for diagnosis of the parasite oocystes in the faeces of the birds comparison to the direct examination, with significant differences was $p < 0.05$.

The extract of ginger (*Zingibar officinale*) exhibited high efficiency in treatment of infected pigeons with coccidiosis, and the highest efficiency 91% was by using 10% of the extract, with significant differences on level $p < 0.05$ comparison to that of 5% which was 70%.

معالجة الإصابة الطبيعية لطيور الحمام بداء الاوكريات باستعمال مستخلص الزنجبيل في محافظة بابل

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الخلاصة:

تم فحص عينات البراز التي جمعت من 25 طيرا من الحمام للكشف عن مدى انتشار طفيلي الكوكسيديا (*Eimeria* spp.) في هذه الطيور ، إذ سجلت الإصابة في 21 طيرا من مجموع 25 طيرا (84%) منها 12 طيرا من الذكور (85.7 %) و 9 طيور من الإناث (81.8 %). أظهرت طريق التطويف باستعمال كبريتات الزنك أفضلية في الكشف عن الأكياس البيضية في براز طيور الحمام مقارنة بطريقة الفحص المباشر وعلى مستوى أهمية بلغت$p<0.05$.

اظهر مستخلص الزنجبيل كفاءة عالية في معالجة الطيور المصابة بالطفيلي وكانت أعلى كفاءة بتركيز 10% وبلغت 91% وبفارق مهم إحصائيا على مستوى $p<0.05$ مقارنة بكفاءة مستخلص الزنجبيل 5% والتي كانت 70%..

Introduction:

Coccidia parasites are protozoan that are common pathogens in pigeons, and nine species of the genus *Eimeria* were described in these birds , but only three species are of significant they *were E. columbae* , *E. columbarium* and *E. labbeana* [1]. The most pathogenic and frequently observed species is *E. labbeana* [2]. Coccidiosis of pigeons may occasionally be seen in young squabs ,especially when are reared intensively and when hygiene is poor, while older ones serve as carrier and remain apparently healthy [3]. Pigeons can be infected only by ripe oocystes of pigeon *Coccidia*, and not by these of any other of animals [4]. The prevalence of pigeon coccidiosis in different countries of the world is ranged 50-100 % and mortality may be reached to 70% in juvenile pigeons [5,6,7]. In Iraq [8] reported that prevalence of coccidiosis among pigeons was 35% and the infection showed clear effects on rate of growth and weight of the birds. Some previous studies concern with using chemical drugs in the treatment of coccidiosis in pigeons and other birds , which show many side effects that lead to death, low growth and infertility [9,10,11]. [12] were succeeded in treatment of giardiasis in pigeons by using ginger extract which exhibited high efficacy with 10% concentration. Thus the present study aimed to evaluate ginger extract as anticoccidial treatment against natural infection of coccidiosis in pigeons.

Material and Methods :

Twenty-five pigeons (male and females) were examined during the period from October to November 2014, in laboratories of Mousyab Technical institute to detect natural infection with coccidiosis in pigeons.

Samples of faeces were examined firstly by direct smear which include mixed of faeces with drop of water on glass microscope slide and examined at low (10x) and high (40x) power to detect oocystes of the parasite, then flotation technique used by mixed one gram of faeces with sufficient saturated salt solution , then preparation pour through cheese cloth and filtered. Solution is pour again in straight sided tube , that immediately covered by cover slip , after 7-8 minutes the cover slip removed and examined at low and high power [13].

The *Zingbar officinale* rhizome was purchased from local commercial sources and shade dried at room temperature before being pulverized with an electric grinder , the extract then obtained by maceration method (100 gm) with one liter of distilled water for 48 hours to obtain a final aqueous concentration of 100 mg/ml as stated in the way of [14].

Infected pigeons divided to two groups , the first one contain 11 birds treated with 10% ginger extract , the second contain 10 birds treated with 5% of the same extract , after seven days of treatment , both groups examined to detect the presence of oocystes in the faeces .

Chi-square analysis was used to analyzed the results which considered significant on the level $p< 0.05$ [15].

Results and Discussion :

Our study had been showed that 21 pigeons were infected with *Eimeria* spp. from the total number of the examined birds which was 25 (84%). No significances were found between male and female infected pigeons (Table 1). Our result are in agreement with [5,6,7] whom found high prevalence of coccidiosis among pigeons ranged between 50-100% , and

also with [8] who found no significances between male and female pigeons which was infected by *Eimeria* spp.

Table 1: Rate of infection with coccidiosis among male and female pigeons.

sex	No. Exam.	No. infect.	%
Male	14	12	85.7
Female	11	9	81.8NS
Total	25	21	84

NS: no significant

Flotation of faeces by zinc sulphate was the best method for the diagnosis of the parasitic oocystes comparison to the direct examination of faeces , also the most of infected pigeon found excreted liquid faeces (Table 2), the same results were found by [8,16] whom reported that flotation by zinc sulphate consider the typical method for diagnosis of the parasite.

Table 2: Methods used for diagnosis of coccidiosis among pigeons.

No. bird	Zinc sulphate	Direct exam.	Faeces consistency
126	++	+ *	Liquid
101	+++	+++	Liquid
113	++	+	Soft
114	-	-	Soft
125	+	-	Soft
118	+	-	Liquid
129	++	++	Liquid
100	++	+	Liquid
132	+++	+	Liquid
107	-	-	Soft
112	+	+	Liquid
122	++	++	Liquid
123	++	++	Liquid

117	+++	+	Liquid
105	+	+	Liquid
131	-	-	Soft
110	++	+	Liquid
143	++	+	Liquid
121	+	-	Liquid
108	++	+	Liquid
136	+	-	Soft
119	++	++	Liquid
102	+++	++	Liquid
116	++	+	Liquid
130	-	-	Soft

*$p < 0.05$

The previous studies had shown a good effect ginger extract against *Schistosoma mansoni* and *Angiostrongylus contonensis* [17,18] , and also the present study had shown that 10% ginger extract given twice daily for two days lead to disappear of oocystes completely from faeces of 10 birds out of 11 birds had been treated (Table 3) , while 5% of the same extract give less efficiency which reach 70% only (Table 4). These results indicate that 10% ginger extract exhibited high efficiency ($P< 0.05$) comparison to 5% of the extract (Table 5) , and corresponding with [12, 19] whom reported that there is increase in the efficiency of plant extracts with the increase of the concentration.

High prevalence of coccidiosis among pigeons (84%) in this study consider important indicator from the epidemiological aspect , which mean that homing pigeons suffering from true hazard, represented in the high mortality among infected pigeons, especially the juvenile ones that rearing in a bad sanitary conditions.

Table 3: Therapeutic efficiency of 10% ginger extract against coccidiosis in pigeons.

No. bird	Before treatment		After treatment	
	Zinc sulphate	Direct exam.	Zinc sulphate	Direct exam.

113	++	+	-	-
122	++	++	-	-
118	+	-	-	-
129	++	++	-	-
123	++	++	-	-
126	++	+	-	-
110	++	+	-	-
102	+++	++	+	-
143	++	+	-	-
119	++	++	-	-
108	++	+	-	-

Table 4: Therapeutic efficiency of 5% ginger extract against coccidiosis in pigeons.

No. bird	Before treatment		After treatment	
	Zinc sulphate	Direct exam.	Zinc sulphate	Direct exam.
125	+	-	-	-
101	+++	+++	+	+
100	++	+	-	-
112	+	+	-	-
116	++	+	-	-
136	+	-	-	-
117	+++	+	+	-
121	+	-	-	-
132	+++	+	+	-
105	+	+	-	-

Table 5: Therapeutic efficiency of 10% and 5% ginger extract against coccidiosis in pigeons.

Concentration of ginger extract (%)	No. of treated pigeon	No. of recovery pigeon	Efficiency of treatment (%)
10	11	10	91
5	10	7	70 *

*p< 0.05

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