

## prevalence of subclinical coccidiosis associated with house reared chickens in Al-Muthanna province , Iraq

Lecturer: Mohenned A. Hemzah Al Se'adawy

Veterinary Medicine College, Al-Muthanna Univ.

E-mail: [mohennedalbdeary@yahoo.com](mailto:mohennedalbdeary@yahoo.com)

### Abstract:

A point prevalence study was conducted to determine the prevalence of *Eimeria* species in house reared chickens in Al- Muthanna province in western south of Iraq. 129 fecal and intestinal samples were collected. The total infection with *Eimeria* species was 21.7%. Highest infection rate was 28.5% with *E. acervulina* while lowest infection rate was 7.1% with *E. brunetti* and *E.tenella*. The highest prevalence rate was in months of November (52%) while lowest rate in February 3.3% and there was significant effect of months on proportion of positive samples at  $P<0.05$ .

**Key words:** Subclinical coccidiosis, house reared poultry, *Eimeria*.

### انتشار داء الكوكسيديا تحت السريري في الدجاج المحلي في محافظة المثنى / العراق

مدرس: مهند عبد الحسين حمزة السعداوي

جامعة المثنى، كلية الطب البيطري

### الخلاصة:

هدفت الدراسة الى تحديد انتشار انواع طفيلي الايميريا في الدجاج المحلي المربي في البيوت في محافظة المثنى الواقعة جنوب شرق العراق. جمعت 129 عينة براز وامعاء وتبين ان نسبة الاصابة الكلية بجنس الايميريا 21.7%. كانت اعلى نسبة اصابة بالنوع *E.acervulina* (28.5%) واقلها بالنوعين *E.brunetti* و *E.tenella* (7.1%). اظهرت اشهر السنة تأثيرا معنويا على نسبة الاصابة تحت مستوى احتمال  $P<0.05$  اذ كانت اعلى نسبة اصابة في شهر تشرين الثاني (52%) واقلها في شهر شباط (3.3%).

### Introduction:

Infection of the coccidia are important in poultry. Most of the Coccidia in poultry are in the genus *Eimeria*, but a few species of *Isospora*, *Cryptosporidium*, and *Sarcosporidia* are represented. The *Eimeria* are best known, with seven important species recognized in chickens and several others in turkeys. Diagnosis of coccidiosis is by recognition of classic signs and lesions, by gross examination

and can be aided by microscopic examination of feces and intestinal contents. Control of coccidiosis is by preventive use of anticoccidials and by immunization<sup>1</sup>.

The house reared chickens usually rose in free-range type of management, which is certainly an acceptable type of husbandry practice, but there are some special health considerations to keep in

mind, especially in the area of parasite control <sup>2</sup>. Free-ranging birds have an increased opportunity to encounter the infective eggs, larvae, and intermediate hosts of parasites that can cause serious debilitating infections. <sup>3,4</sup>

The aim of present study was conducted to determine the species and prevalence subclinical infections of coccidian protozoa associated with the house reared chickens in Al-Muthanna province. It studies the occurrence of such parasites in terms of their prevalence

### Materials and Methods:

#### Study area and sample collection

A point prevalence study was conducted to determine the prevalence of *Eimeria* species in house reared chickens in Al-Muthanna province in western south of Iraq. 129 fecal and intestinal samples were collected and preserved in 10% formalin, and later stored in a fridge at 4°C before laboratory analyses.

#### Laboratory analyses

A ten gram of chickens faeces or Scrape samples of intestine materials were dissolved in 10 ml water then filtered by using two layers of gauze and carefully transferred to one or more centrifuge tubes, depending on the volume, and centrifuged at 3000 rpm for 5 minutes, the supernatant removed and transferred all the sediments to one tube, and recentrifuged at 3000 rpm for 5 minutes, then the pellet Suspended in an equal volume of acetoacetic buffer, pH 4.5, after extraction with ethyl acetate , there is sufficient volume of buffer above the pellet to allow the ethyl acetate layer to be poured off without resuspension of the pellet.

3 ml of ethyl acetate or ether and 7 ml of formalin (10%) added , and the solution mixed thoroughly in a vortex mixer. The sample can also be shaken by hand. This is quite acceptable if a mechanical mixer is not available then Centrifuged the sample at 3500 rpm for 15 min. The sample will now have separated into three distinct phases. All the non-fatty, heavier debris, including helminth eggs, larvae and protozoa, will be in the bottom layer. Above this will be the buffer, which should be clear.

The fatty and other material moves into the ethyl acetate or ether and forms a thick dark plug at the top of the sample. It may be necessary to loosen the fatty plug first by running a fine needle around the side of the centrifuge tube. Quickly remove an aliquot with a Pasteur pipette and transfer to a glass slide for final examination. Place glass slide on the microscope stage and examine under 10× or 40× magnification. Statistical analysis carried out by using chi square according to Rocco, J. P. and James, C.(2005) <sup>5</sup>. Prevalence was calculated by dividing the number of infected hens by the total number of examined ones and was expressed as a percentage.

### Results:

The total infection with *Eimeria* species is 21.7% (table 1). Highest infection rate was 28.5% with *E. acervulina* while lowest infection rate was 7.1% with *E. brunetti* and *E.tenella* (table 2). prevalence was highest rate in months of November (52%) while lowest rate in February 3.3%. there was significant effect of months on proportion of positive samples (table 3).

Table (1):number and proportion of total positive samples with *Eimeria*

Population size	positive in the population	
	No.	%
129	28	21.7

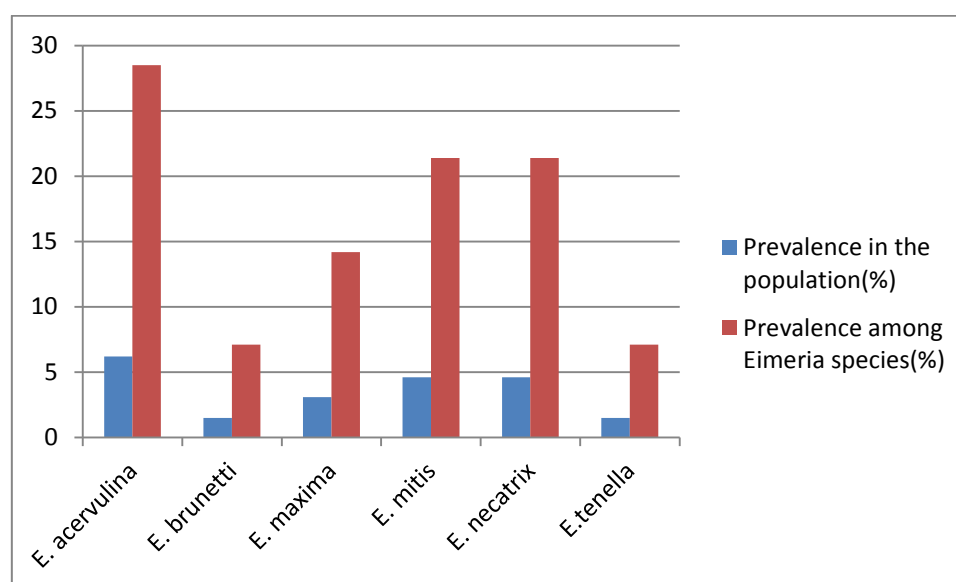
Table 2: The prevalence of the various *Eimeria* species in the sample population

<i>Eimeria</i> species	No. positive for individual species	Prevalence in the population(%)	Prevalence among <i>Eimeria</i> species(%)
<i>E. acervulina</i>	8	6.2	28.5
<i>E. brunetti</i>	2	1.5	7.1
<i>E. maxima</i>	4	3.1	14.2
<i>E. mitis</i>	6	4.6	21.4
<i>E. necatrix</i>	6	4.6	21.4
<i>E. tenella</i>	2	1.5	7.1

Table 3: number and proportion of positive samples with *Eimeria* species from November 2011- April 2012

month	Examined samples	positive samples	
		No.	%
November	25	13	52*
December	23	5	21.7
January	11	1	9.09
February	30	1	3.3
March	13	6	46.1
April	27	2	7.4
Total	129	28	

\* Significance differences (  $P < 0.05$  ).

Fig. (1) The prevalence of the various *Eimeria* species in the sample population

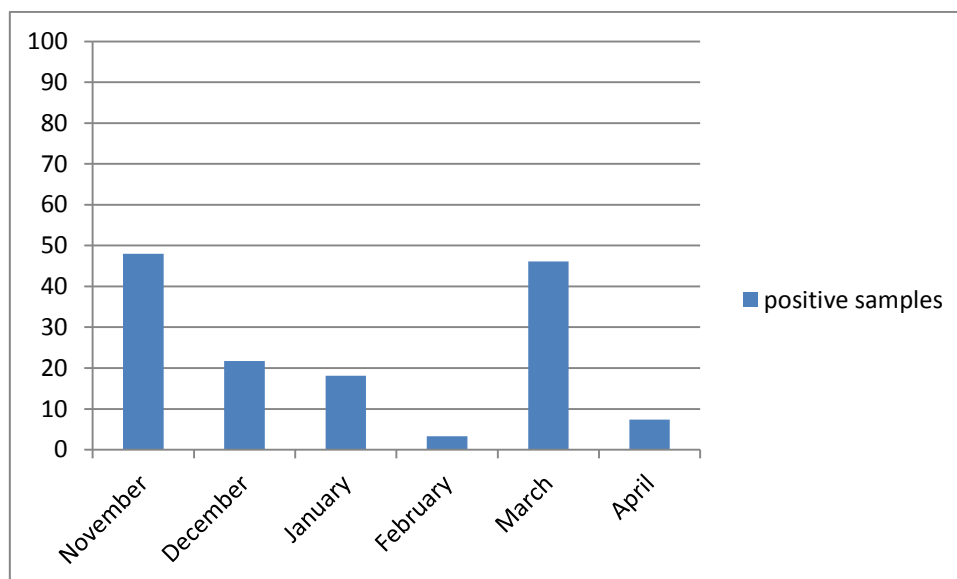


Fig. (2) number and proportion of positive samples with *Eimeria* species from November 2011- April 2012



*E.acervulina*



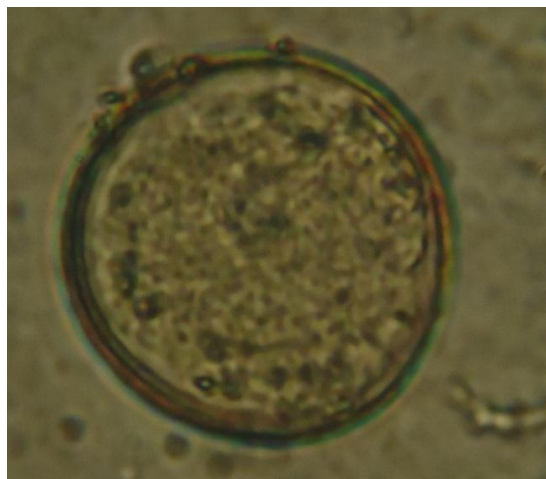
*E.mitis*



*E.brunetti*



*E.necatrix*

*E.tenella**E.maxima*

### Discussion:

The results of this study showed that the percentage of positive samples 21.4%, and this result is less than the result found by <sup>6</sup> in Nineveh province to investigate the clinical cases of Coccidiosis in broiler - chicken as record ratio 45% may be the reason for this rise in that study to crowding within the chicken farms, which helps to spread infection rapidly, as well as the development of resistance against anti-coccidial drugs in broiler - chicken and indiscriminate use of these drugs by poultry breeders and the differences among species of chickens between our and another study.

The result is higher than that <sup>7</sup> found in the province of Nineveh, as he made field survey for the most important diseases that affect broiler - chicken and found that the incidence of Coccidia 13.2% may be the reason for this decline to use anti-coccidiosis drugs regularly during that period in the farms, and the lack of this regular use in chickens reared outside the fields.

This study recorded 6 species of *Eimeria*: *E.acervulina* 28.5%, *E.brunetti* 7.1%, *E.maxima* 14.2%, *E. mitis* 21.4%, *E. necatrix* and 21.4%, *E. tenella* 7.1%. The ratios of *E.acervulina*, *E.maxima*, *E. mitis* and *E. necatrix* were higher than the ratios found by Mustafa which were 5.44%,

1.98%, 7.92% and 11.88% respectively while less than ratios of *E. tenella* and *E.brunetti* which were 32.17% and 12.37% respectively. This result is attributed to the difference in the type of chickens reared in the farms and the local chickens and thus the difference in immunity of bird against types *Eimeria* <sup>8</sup>.

The results showed that the highest rate to infection in November and March either the lowest rate in February and there are significant effect in November, this may be due to the high level of humidity in this months of the year. These results are in consonance with those of <sup>9</sup>.

Management of poultry houses plays a significant role in the spread of eimeriosis because coccidial oocysts are ubiquitous and are easily disseminated in the poultry house environment <sup>9</sup>.

### References:

- 1- McDougald, L. R. (1997). Protozoa. Chapter 34. Pages 865–912 in: Diseases of Poultry. 10th ed. B. W. Calnek, H. J. Barnes, C. W. Beard, L. R. McDougald, and Y. M. Saif, ed. Iowa State University Press, Ames, IA.
- 2- Rayyan, A.; Al-Hindi, A. and Al-Zain, B.(2010). Occurance of gastro intestinal helminthes in commercial and free range

chickens in Gaza strip Palastine. Egypt. Poult. Sci. Vol(30)(II): 601-606.

**3- Wilson, R.T.; Traore, A.; Kuit, H.G. and Slingerland, M.**( 1987). Livestock production in central Mali: Reproduction, growth and mortality of domestic fowl under traditional management. Trop. Anim. Health Prod., 19: 229–236.

**4- Aini, I.**( 1990). Indigenous chicken production in South-east Asia. World's Poult. Sci. J., 46: 51–57.

**5- Rocco, J. P. and James, C.**(2005). Use of the Chi-square Test to Determine Significance of Cumulative Antibigram Data. Amer. J. of Infec. Diseases. 1(4): 162-167.

**6- ALNeema, M.S. and Al-Taee, A.F. (2008).** Incidence of Eimeria spp in broilers in Al-Hamdania region-Ninevah. Iraqi J. of Vet. Scie. 26(3):201-206.

**7- AlAttar, M.Y. (1994).** Survey of broiler chickens diseases in Ninevah. Iraqi J. of Vet. Scie. 7(3).

**8- Jordan, F.; Pattison, M. ; Alexander, D. and McMulin , B. (2008).** Poultry Diseases. 6th ed. Saunders Elsevier. Philadelphia. U.S.A.444-451.

**9- Williams, R. B.(1995).** Epidemiological studies of coccidiosis in the domestic fowl (Gallus gallus). II. Physical condition and survival of Eimeria acervulina oocysts in poultry house litter. Appl. Parasitol., 36: 90-96.