



## RESEARCH ARTICLE

### 'A STUDY IN THE PREVALENCE OF HORSE'S HELMINTHES PARASITIC INFECTION IN BAQUBA CITY; DIYALA PROVINCE'

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#### ABSTRACT

During 5 months (December 2013-april 2014), 52 faecal samples of horses (32 females and 20 males) were randomly collected & examined from different districts of Baquba city. Prevalence of helminthes infection shows 100% of 5 genera of nematodes infection in the 52 horses cases examined; with different intensity of different species or mixed infection. The total highest prevalence reported to *Strongylus spp.* 34 (44.2%); while the total lowest prevalence reported for *Parascaris spp.* 3 (3.9%); results shows also the total monthly highest prevalence was 23 (29.9%) in March month, as for *Strongylus spp.* 9 (11.7%); while the total lowest monthly prevalence was reported in December 11 (14.3%) with 1 (1.3%) for *Parascaris spp.* and 0 for *Strongyloides spp.*. The study revealed significant difference between monthly infected horses  $p = 0.000$ ; with no significant difference between infected horses nematodes species values  $p = 0.186$ . Results revealed higher prevalence infection of females 32 (61.5%) than for males 20 (38.5%) with significant difference  $p = 0.000$ . Given data might be aid in epidemiology of equine helminthes and minimize its public and veterinary infections.

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#### INTRODUCTION

In parasitological studies carried out in different cities of Iraq on horses and donkeys, helminthic infections were reported in horses of Baghdad<sup>(1)</sup>, Mosul<sup>(2, 3)</sup>; Basra<sup>(4)</sup>; AL- Najaf<sup>(5)</sup>; and Diwaniyah<sup>(6)</sup>.

Nematoda species were reported in different studies for Iraqi equine { *Strongylus vulgaris*, *S. edentatus* and *S. equineswere*; *Trichonema spp.*; *Triodontophorus spp.*; *Parascaris equorum*; *Trichostrongylus axei*; & *Habronema spp.* }, 2 species by<sup>(7)</sup>; 4 genera, by<sup>(8)</sup>, 8 spp. by<sup>(4)</sup>; 9 spp. by<sup>(1)</sup>; and 9 spp. by<sup>(9)</sup>. The Nematodes infects digestive tract are one of the most important obstacles that hinder the success of horse breeding and development in different parts of the world by its significant role, that influencing the health of the horses and efficiency of physiological and could lead to death, also become one of the problems fixed in the past years presented during different life periods of the horses. for example, *parascaris quorum* infects young foals with higher percentages represent the first obstacle during early stages of its growth<sup>(10)</sup>

For first time, This study was aimed to determine the prevalence of horses endoparasites according to faecal examination in Diyala, Baquba city for first time.

#### MATERIALS & METHODS

During 5 months (December 2013-april 2014)an52 faecal samples of horses (32 females and 20 males) were randomly

collected & examined from different districts of Baquba city { Al-Hejia river, Azzat, Al-Gaton, stable of Diyala Vet. med college and Al- Muradia village}. The ages of animals ranged (2-6) years. The samples of fresh faeces were placed in plastic cups and sent to the laboratory of Diyala Vet. med college for parasitological examinations. The samples were examined with Sheather's sugar saturated flotation method, sedimentation method, and direct smear method. The Diagnosis of the eggs and larvae depended on the special shape of each one<sup>(11,12)</sup>.

#### RESULTS

The climate in Baqubah is called a desert climate. Throughout the year, there is virtually no rainfall in Baqubah. The Köppen-Geiger climate classification is BWh. The average annual temperature in Baqubah is 22.8 °C. The average annual rainfall is 186 mm; Coordinates: 33°45'N 44°38' E / 33.750°N 44.633°E<sup>(13)</sup>. months; with different intensity of different species or mixed infection; table (1) fig. (2, 4). 5 genera species of nematodes *Trichostrongylus spp.*, *Strongylus spp.*, *Oxyuris spp.*, *Parascaris spp.* and *Strongyloides spp.* were identified. The total highest prevalence reported to *Strongylus spp.* 34 (44.2%) and *Trichostrongylus spp.* 20 (26%); while the total lowest prevalence reported for *Parascaris spp.* 3(3.9%); results shows also the total monthly highest prevalence was 23 (29.9%) in March month, as for *Strongylus spp.* and *Strongyloides spp.* 9 (11.7%) and 8 (10.4%) respectively,

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then followed in April 16 (20.8 %) ; while the total lowest monthly prevalence was reported in December 11 (14.3 %) with 1 (1.3 %) for *Parascaris spp.* and 0 for *Strongyloides spp.*; then followed in January 12 (15.6 %) Table (1), fig.(2) . The study revealed significant difference between monthly infected horses  $p = 0.000$  with no significant difference between nematodes species values infected horses  $p = 0.186$ .

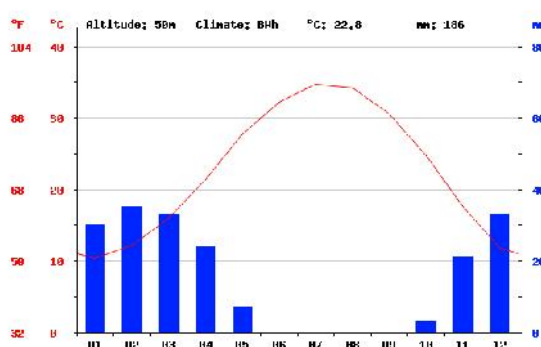
Results found a higher prevalence infection of females 32 (61.5 %) than for males 20 (38.5 %) with significant difference  $p = 0.000$  . Table (2) , fig ( 3) .

### DISCUSSION

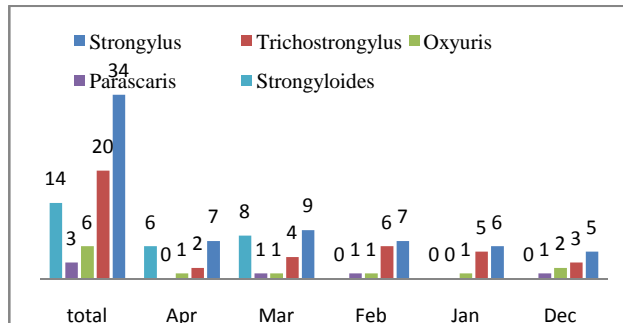
In this study prevalence of helminthes shows months ; with different intensity of different species or mixed infection ;

**Table 1** Shows date and parasites species for examined Horses .

Months	Dec	Jan	Feb	Mar	Apr	Total
Horse no.	8	10	15	12	7	52
	Mixed infection of Parasites no. & %					
<i>Strongylus spp.</i>	5(6.49 %)	6 (7.79%)	7 (9.1 %)	9 (11.7 %)	7 (9.1 %)	34(44.2%)
<i>Trichostrongylus spp.</i>	3(3.9%)	5 (6.49%)	6 (7.79%)	4(5.2%)	2(2.6%)	20(26 %)
<i>Oxyuris spp.</i>	2 (2.6 %)	1 (1.3 %)	1 (1.3 %)	1(1.3 %)	1(1.3 %)	6 (7.9 %)
<i>Parascaris spp.</i>	1(1.3 %)	0	1(1.3 %)	1(1.3 %)	0	3(3.9 %)
<i>Strongyloides spp.</i>	0	0	0	8(10.4%)	6(7.79 %)	14(18.2%)
Total	11(14.3 %)	12(15.6 %)	15(19.5 %)	23(29.9 %)	16(20.8 %)	77(100 %)



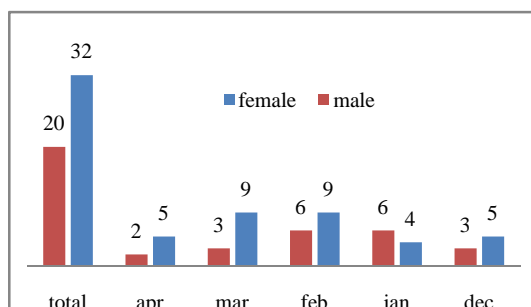
**Fig 1** Baquba's Metrological data



**Fig. 2** shows parasites spp. monthly distribution

**Table 2** shows sex of horse examined monthly distribution

Date /months	Horse examined					Total
	Dec	Jan	Feb	Mar	Apr	
	sex					
female	5 (9.6%)	4 (7.7 %)	9 (17.3 %)	9 (17.3 %)	5 (9.6%)	32(61.5 %)
male	3(5.8 %)	6 (11.5 %)	6 (11.5 %)	3 (5.8 %)	2 (3.8 %)	20(38.5 %)
Horse / number	8 (15.4%)	10 (19.2 %)	15 (28.8 %)	12 (23.1 %)	7 (13.5 %)	52



**Fig. 3** shows sex of horse examined monthly distribution

disagree with the study of <sup>(8)</sup>, whose results revealed that the rate of horse parasitic helminthes was 50. 54%. ; but agree with previous reference findings in that The peak of Nematode infection was 86.6% in Spring followed by 57.5% during Autumn then the infection declined in Summer and Winter to 33.73% and 22.5% respectively as it found in our results which showed that the total highest prevalence reported to *Strongylus spp.* 34 (44.2%) and *Trichostrongylus spp.* 20 (26 %) total lowest monthly prevalence was in December 11 (14.3 %) with 1 (1.3 %) for *Parascaris spp.* and 0 for *Strongyloides spp.*; then in January 12 (15.6 %) .

The increasing of nematodes infection prevalence may be due to spring rise phenomenon <sup>(14, 15)</sup>, the increase percentage of births in Autumn and spring or the pregnancy period and decrease immunity particularly in pregnant females <sup>(16, 17)</sup>; while the decreasing in infection prevalence rates in summer and winter could be due to reduction of temperature rates in winter that leading to decline in of egg hatching and arrested larval development; while in summer, the high temperate leads to larval fatalities and damage of eggs beside low humidity causing absences of larval mobility and migration towards plants <sup>(18, 19, 20)</sup> .

Nematodes species variation recorded were highest prevalence 34 (44.2%) for large red worms *Strongylus spp.* among other

parasites were agreed with <sup>(8)</sup>, 49.54% in Baghdad ; and in AL- Najaf 27.7% with <sup>(5)</sup>; and in Diwanayah 50% with <sup>(6)</sup>

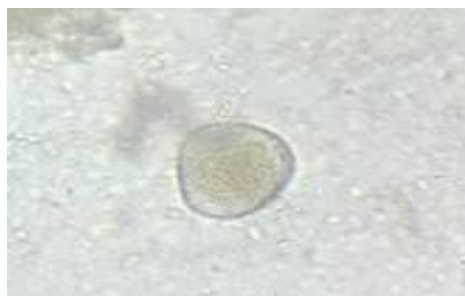
This could be due to ; *Strongylus spp.* commonly known as the blood worm, is a common horse parasite which generally lives in the large intestine. It is considered one of the most pathogenic nematode parasites of horses and is widely distributed worldwide wherever there are grasslands as characterize the study area <sup>(21)</sup> .

*Trichostrongylus spp.* was showed second prevalence 20 (26 %)in this study which agree with <sup>(6)</sup> report in Diwanayah

*Trichostrongylus axei* was confirmed in 25% of examined horses, this result higher than the results of <sup>(1)</sup> of horserace in Baghdad and Mosul <sup>(3)</sup> who recorded 10% and 8%



A



B



C

Fig.(4) (a) larva, egg of *Strongyloides* spp., (b) eggs of *Strongylus* spp. and (c) egg of *Oxyuris* spp.

respectively; While it was not recorded by <sup>(2)</sup> in Mosul. <sup>(6)</sup> reported in Diwanayah the prevalence of *Strongyloides westri* in horses was 22.72% more than the results of <sup>(10)</sup>, and <sup>(3)</sup> which was 1.6% and 11.2% respectively. *Strongyloides* spp. also called threadworms are a group of parasitic roundworms that affect many domestic and wild vertebrates including horses. They are also found worldwide in regions with warm, humid climates, and also in rural areas with poor sanitation standards <sup>(22)</sup>.

low prevalence recorded for *Parascaris* spp. 3 (3.9 %) could be due to high age horse examined particularly our horses were for drought purpose and because this parasite higher susceptibility in young ages; this agree with <sup>(23)</sup>; while for

*Oxyuris* spp. 6 (7.9 %) this diversity could be due to low number of animals examined also to their habitat, style of grazing, pasture, the season of the study period and ecology of the study area.

High female horse sex infection recorded in our study agree with <sup>(24)</sup>, may be due hormonal disturbance in the pregnancy and lactation period which decrease immunity and resistance to parasitic infection.

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خلال فترة خمسة اشهر ( 2013 - نيسان 2014 ) جمعت عشوائيا 52 عينة براز خيول ( 32 20 ) من مختلف مناطق مدينة . بينت النتائج ان معدل انتشار الاصابة بالديدان الباطنية 100% .  
5 اجناس عائدة للديدان الاسطوانية وبمختلف النسب لانواع الديدان او الاصابة  
Strongylus spp. 34  
Parascaris spp. (44.2%) , بينما كان اقل معدل انتشار كلي قد سجل للجنس  
3 (3.9%) , لقد سجل شهر اذار اعلى معدل انتشار 23 (29.9%)  
Strongylus spp , (11.7%)  
1 (1.3%) Parascaris spp. لشهر كانون الاول 11 (14.3%) حيث كان  
Strongyloides spp. (0%) .  
لمعدل اصابة الخيول الشهري بينما لم يكن الفرق الاحصائي ملحوظ 0.000  
p وكان الفرق ملحوظ احصائيا 0.186 p معنويا لاصابة الخيول بانواع الديدان  
32 (61.5%) عنها في الذكور 20 (38.5%) .  
ان المعطيات الظاهرة في هذه الدراسة قد تساعد في معرفة و توضيح وبائية  
الطفيليات الداخلية للخيول كما و لها الاثر المهم في اختيار العلاجات  
حد من انتشارها بيطريا وصحيا .  
فرع الاحياء المجهرية , كلية الطب البيطري ,  
ديالى

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