

DIAGNOSTIC STUDY OF GASTRO-INTESTINAL PARASITES IN BUFFALOES OF DIWANYIAH PROVINCE

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(Received 15 December 2016 ,Accepted 13 May 2017)

Key world: *Eimeria spp*, *Cryptosporidium spp*, Buffaloes,

ABSTRACT

Aim of study is detect the distribution of gastro intestinal parasites in buffaloes of Diwanyiah city in February till June 2015 using slandered parasitic loud. A total of 85 fecal samples were examined, 74% of them were parasitized (with gastro-intestinal parasites) as follow, *Eimeria spp.* (38%)(*E. zuerniand E. brasilienisis*), *Cryptosporidium spp.* (20.63%), *Trichostrongylda*(7.56%), *Trichuris spp.* (3.78%), *Toxocaravitulorum* (0.63%), *Fasciola spp.* (3.15%) and *Moniezia spp.* (1.26%). In our study mixed infection was recorded.

Results were also found that higher infection rate were encountered in rainy months of the year, however the intensity of GIT parasitic infection were detected at cold, climate and associated with diarrhea of diseased animals.

It had been concluded that GIT parasitic infection had a substantial effect on health, growth rate and production of diseased buffaloes, There for attention should be forwarded by owners and veterinaries.

Gastro-intestinal parasitic infection mostly associated with occurrence of diarrhea in buffaloes, which effect on the health condition and production of these animals, infections should more attention by both owners and veterinarians.

INTRODUCTION

In Iraq, for meat and dairy production, Buffalo is very important, spread into parts specially Asian and African countries, South America and some seastates Almotostawiad buffalo Asian most numerous and most productive of milk for the consumer as well as the bulk of the world population depends on buffalo domestic water to its importance economic (1).



Buffalo belongs to the genus (Bubalao) of some types of buffalo is characterized by dark gray and black, color common to buffalo in Iraq and Arab countries because the Iraq buffalo to Indian origin and this type is resistant to many diseases and has the ability to adapt and carry aldhara difficult, and feed buffalo marshes of southern Iraq on plants and herbs marshes which do not benefit from cows and sheep (2).

Helminthiasis is a well-recognized problem in free-ranging animals. One or more helminthes parasites are usually infected cattle, buffalos, sheep and goats. The differences in the distribution of parasitic intensity depends upon the topographic, pasturing, immunological & nutrition of the host, the intermediate host and number of infective stage or eggs ingested by the animals. In the development of a profitable livestock industry worm infestation is one of the major constraints. In the alimentary tract gastro-intestinal helminthiasis syndrome is always caused by a mixture of species of helminthes parasites (Table, 1). Effect of helminthes on the production are well documented all over the world. The reduction in feed intake and anorexia, loss of blood and plasma proteins in gastro-intestinal tract, alterations in protein metabolism, decrease in levels of minerals, enzymes and diarrhea, all contribute to loss in weight gain (3).

Facing water buffalo herding many obstacles of facting the economic side for educators such as by internal parasites in addition to hit the same species that infect cows such as (*Eimeriaspp* ,*Cryptosporidium spp* ,*Toxocaravitulorum*,*Fasciola spp* and *Trichostrongylidae*)as cause economic loss and symptoms manifested in poor growth, loss of appetite and digestive symptoms (15).

Infection with gastrointestinal parasites among the important factors contributing to increased calf mortality ,sub-clinical nematode parasitic infection cause great economic losses and dam milk production because it affects the availability of nutrients ,the development of the digestive tract and (the appropriate development of the immunity system against some diseases such as parasitosis (16).



The protozoa which infect the buffalo and caused economic losses result of the severity of the pathogenicity is leading to a lack of production of milk ,intestinal protozoan spread through pastures in all countries of the world because presence of carrier and causes heavy losses in the productive animals field (17).

Due to the lack of studies on the most important internal parasites that infect the gastrointestinal tract in Buffalo in Diwaniya province our study was conducted to determine the parasite that infects buffaloes.

Table (1) Show the researches which recognized mixed gastro-intestinal infection in buffalo in the world.

Ref.	Country	TV	TRS	FS	TS	MS	CRS	ES
(3)	India	+	+	+	-	-	-	-
(4)	Pakistan	+	-	-	+	+	-	+
(5)	Malaysia	+	-	-	-	+	-	+
(6)	Egypt	-	-	-	-	-	+	-
(7)	Pakistan	+	-	-	+	+	-	+
(8)	India	-	-	-	+	+	-	+
(9)	Pakistan	-	-	-	-	-	-	-
(10)	India	+	-	-	-	+	-	+
(11)	Pakistan	+	-	-	+	+	-	+
(12)	Bangladesh	+	-	-	-	-	-	-
(13)	Pakistan	+	-	-	-	-	-	-
(14)	India	+	+	+	-	+	-	+
(3)	India	+	+	+	-	-	-	-
(4)	Pakistan	+	-	-	+	+	-	+

Toxocaravitulorum= TV, Trichuris spp. = TRS, Fasciola spp. = FS, Trichostrongylusspp= TS, Moniezia spp. = MS, Cryptosporidium app. = CRS, Eimeria spp. = ES.

MATERIALS AND MATHODES

85 fecal samples of buffaloes collected in the province of Diwaniyah from the period from February 2015 - June 2015. The samples were collected from the rectum of the animals, before collection the animals were restrained properly and all possible hygienic measures including wearing of apron, hand gloves and gumboot were taken



to avoid contamination, about 10-15 grams of faces were collected from each buffalo. Each sample was kept in clean containers and sealed and then brought to the laboratory for the purpose of conducting the necessary laboratory tests:

- 1-Direct smear : To investigate Protozoa oocyst and other helminthes.
- 2-Sedimentation method: To investigate the eggs of Trematods and some Nematodes.
- 3-Flotation method (Scheathers solution) ;To investigate the eggs of Nematodes and Oocyst of Prptozoa .
- 4-Acid fast stain:To investigate *Cryptosporidium* spp.
- 5-Ocular micrometer: To diagnose species of *Eimeria* (18), (19).

RESULTS

Results of study showed that out of 85 fecal samples 74% were infected of buffalo, the number of animals infected with internal parasites reached 63 with percentage 74% (Table, 2).

Since 38%of the infection rate indicated *Eimeria* spp. of (*E. zuerni* and *E. brasilensis*), more over crypto, *Monezia*, *Fasciola*, *Toxocara*, *Trichuris* and *Trichostrongyldaewere* had an infection rate of 20.63, 1.26, 3.15, 0.63, 3.68 and 7.56% respectively Table (2).

Table (2) Gastro-Intestinal parasites of buffaloes and there infection rate in our study.

Species of Parasite	Number of infected buffaloes	Rate of infection
<i>Eimeriaspp</i>	24	%38
<i>Cryptosporidium spp</i>	13	%20.63
<i>Moneziaspp</i>	2	%1.26
<i>Fasciolaspp</i>	5	%3.15
<i>Toxocara vitulorium</i>	1	%0.63
<i>Trichuris spp</i>	6	%3.68
<i>Trichostrongyldaewere</i>	12	%7,56

The study results showed that infection of the buffalo by *Eimeria* where 24 with a percentage reached 38 %, and the study was diagnosed two species of *Eimeria*: *E.zuerni* and *E.brasilenisis*, fig (1,2),





Fig (1)*E.zuerni* (X40)

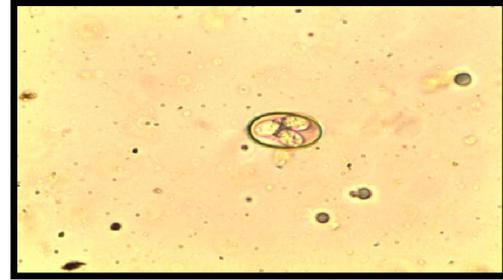


Fig (2)*E.brasilenisis*(X40)

The second genus from parasitic protozoan that has been recorded in this study is the *Cryptosporidium spp.*, the number of infected animals reached 13 (20.63%) fig (3).



Fig(3)*Cryptosporidum*spp(X40)



Fig (4)*Moneziaspp* (X40)

The present study also recorded infected buffalo with *Moneziaspp* terms of the number of infected animals was 2 (1.26%) fig (4).

The study also showed the *infection rate with Fasciola spp.* to 5 (3.15%) fig (5).

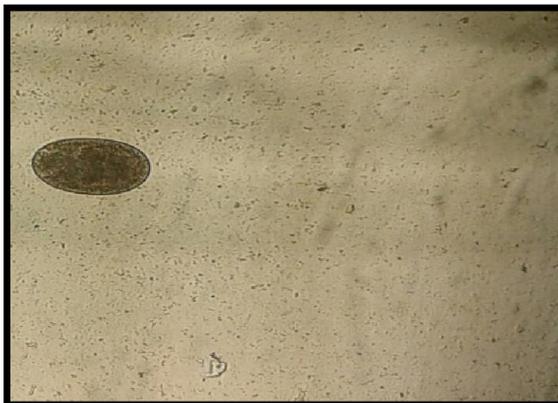


Fig (5)*Fasciolasp*(X40)

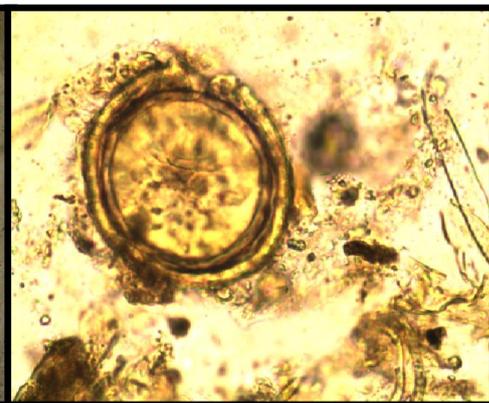


Fig (6)*Toxocaravituloriur*.

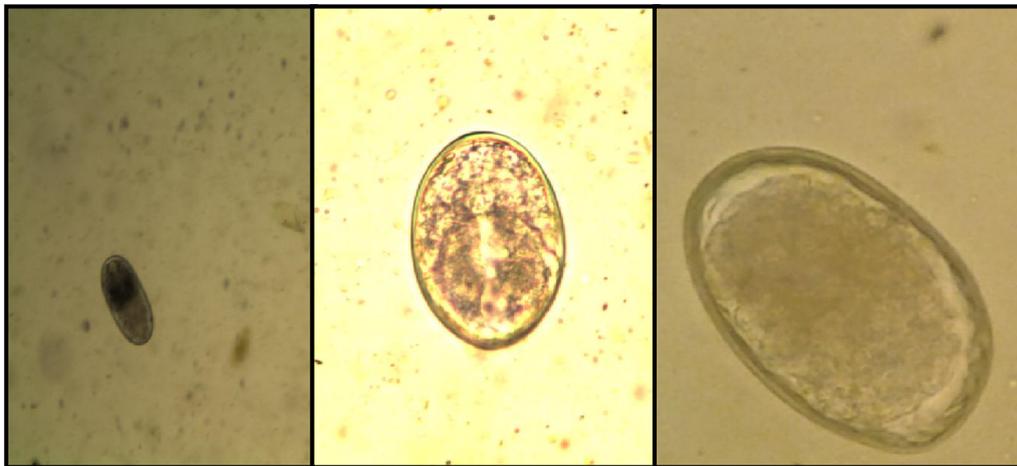


The study recorded a single case of infection with *Toxocaravitulorium* by percentage of (0.63%) fig (6).

The present study also recorded infected the buffalo by *Trichuris spp* the number of infected animals 6by percentage reached to (3.78%).

The present study recorded infected the animals by Trichostrongylidae the number of infected animals 12 by percentage reached to (7.56%) fig (7,8,9).

Fig (7,8,9) Trichostrongylidae eggs



DISCUSSION

Our study was carried out to detect gastro-intestinal parasites of buffaloes of Diwanyia city. In the world many research carried out on infect the buffaloes with parasites because, FAO (2008), show that the buffaloes community is assumption at 185 million, in Asia are 179 million of them (11). The argument of pathogens is reliant on the number of it and the nourishing status of the infecting buffaloes. A serious parasitized of internal parasites in animals basically leads to loss of production. Buffaloes are considered among the most productive domestic animals in the poor tropical countries and are the major source of quality milk, with unique feed conversion capacity, and they produce milk more cheaply than cattle (20).

Although the parasite does not harm the host to a greater extent to cause a serious problem but in heavily infected and small aged animals the parasite could prove



harmful to the host by utilizing the hosts digested food not only resulting in malnutrition but also makes host weak and more susceptible to other diseases by decreasing its immunity(20).

The distribution of gastro-intestinal parasites was 74%. Most common one was protozoa, and then nematode and trematod, and the cestodes were the smallest infection rate among all.

The finding of the our study are in agreement with the finding of(7) found that the distribution of gastro-intestinal parasites in calves was 75 % (60 out of 80)(9). 64.43% of buffaloes were infected with gastro-intestinal parasites (10), and they revealed that the distribution of GI parasitic infections, in 1582 calves in Punjab state in India, was 73.58. in Pakistan, (21) that the internal parasites infect 64.41% of the buffaloes. From total 150 samples, (11) found that the ordinary distribution rate of helminthes parasites in buffaloes was around 64.67%. While our results were less than (8) which described helminthes in buffaloes of 91.44%. And more than(14) were examined 694 buffaloes; among them, 279 (40.20%) parasitism in buffaloes more than one species of gastro-intestinal parasites, (3) found 47% of buffalo calves were infected with gastro-intestinal helminthes, 43% and 4% were positive for nematodes and trematodes, respectively.

The different in prevalence of gastrointestinal helminthiasis from different parts of world could be due to the physiological status, age, animal spp, climatic conditions and the existing Manage-mental practices at farm. And the reflection of global climate change that has been experienced over the last several decades, which has altered distributions of organisms worldwide. Also the might be due to the variation in the sampling area and the number of samples studied.

Three species of protozoa, *Eimeria zuernii*, *E. brasiliensis* and *Cryptosporidium spp.*, and three species of nematode, *Trichostrongylus spp.*, *Trichuris spp.* and *Toxocaravitulorum*, and one species of Trematod and cestodes, *Fasciola spp.*, and *Moniezia spp.*, respectively was found in the present study.



In Pakistan, (3) buffalo calves were infected with gastro-intestinal helminthes, 43% and 4% were positive for nematodes and trematodes, respectively. The four species of helminthes from faecal samples of buffalo calves were identified as *Toxocaravitulorum* (33%), *Ostertagiaostertagi* (8%), *Trichurisovis* (2%) and *Fasciolagigantica* (4%). And(4) identified 11 different species of helminthes from buffalo calves, the species were *Strongyloidespapillosus*, *Toxocaravitulorum*, *Haemonchuscontortus*, *Trichostrongylus spp.*, *Oestertagiaostertagi*, *Oesophagostomumradiatum*, *Bunostomumphlebotomum*, *Monieziabenedeni* and *M. expansa*. In countries with a hot and humid climate, such as the (sub) tropics, the prevalence of parasites are significantly higher than in countries with a cold and dry climate.

(7, 8 and 22) study prevalence of gastrointestinal parasites in buffalo calves. No trematodes were found in any of the calf, will highly infected with nematodes and cestodes. (9) noticed the strongyloides spp *Oesophagostomumradiatum*, *Mecistocirrusdigitatus*, *Bunostmumphlebotomum*,. and *Haemonchuscontortus* in buffalo. Singh and (23) explain that the distribution of GI parasitic infections, as 73.58% calves and *Eimeria spp.* (54.55 %) was the most common GI parasite. *Toxocaravitulorum*(12.43 %), strongyles (32.33%) and *Strongyloides papillosus* (32.33%) were found in overall prevalence of major agro-climatic zones of Punjab. The prevalence of *Eimeria sp.* and *Monieziaexpansawas* comparable in all four major agro-climatic zones.

(14) were identified ten gastrointestinal species of parasites; of them, seven species were helminthes: Amphistome, *Fasciola*, *Strongyles*, *Strongyloides*, *Toxocara*, *Trichuris*, *Moniezia spp.* and two species were protozoa: *Buxtonella*, *Eimeria*and*Entamoeba spp.*. Higher distribution of gastrointestinal infection was detected in the rainy season. The infection rates of *Moniezia spp.* (0.57%) and *Eimeria spp.* (1.15%).



Eimeria and nematodes were determined in faecal samples. *E. bovis* was the most distributed species. It obtains in 6.6% of the samples. The nematodes species were *Toxocaravitulorum* (8.0%), *Hemonchuscontortus* (0.9%), *Strongyles* (0.5%) and *Ostertagiaostertagai* (0.4%)(13).

(11) showed that the maximum distribution of helminthes was noted at the time of rainy season.

The finding of the present study are observed of *EimeriaZuernii*, *E. brasiliensis* (38%) and *Cryptosporidium spp.* (20.63%). Coccidiosis occurs principally in young calves (24). *Eimeria* have host specificity (25).

In Egypt, (6) was establish that the higher distribution of cryptosporidiosis was in diarrheic calves in comparison to non-diarrheic animals. The acerbity of the diarrhea noticed in cryptosporidiosis in pre-weaned animals is mostly high and may finally lead to strict loss of condition and death and economic losses linked with this disease were not only due to the arise mortality, but also to the defective growth rate of the animals, the value of drugs, veterinary assistance and the increased labor involved (26).

(23) observed that *Cryptosporidium*ooocysts sustain for far-off periods in the rainy area, probably due to the high dependent humidity and rainfall, thereby noted a higher risks of transmission to animals.

(27) were examined for parasites of rumen and small intestine from buffaloes slaughtered at Hilla abattoir, four species of the sporozoan genus *Eimeria* (*E. bovis*, *E.brasiliensis*, *E. subspherica* and *E. zuerni*) as well as unspecified species of the same genus were reported from the small intestine.

(28) have noticed an rise in the distribution of *Cryptosporidium* during convinced seasons, in affinity to high rainfall or the number of births.



Three types of nematodes were record, *Trichostrongylus* spp. (7.56%), *Trichuris* spp. (3.78%) and *Toxocaravitulorum* (0.63%).

(29) records a case report describe a case of intestinal obstruction by *Toxocaravitulorum* in a heavily infected Belgian blue calf. Intestines are trapped into internal or external hernias, or by embryonic or acquired remnants. In contrast to other species, intestinal obstruction is less common in cattle. Obstruction by blood clots in hemorrhagic bowel disease. The symptoms in calves are mainly related to the total of adult worms in the small intestine. Whereas moderate infection only causes diarrhea, heavy infection can cause anorexia, constipation, dehydration, steatorrhea, abdominal pain and as evidenced in this case, even obstruction.

T. vitulorum is widespread, but the prevalence is strongly related to climatic conditions. several ways to prevent infection. Routine treatment with levamisole at the age of ten to twelve days prevents a patent infection and therefore prevents recontamination of the environment(30). In Laos,(31) founds 25.5% of 329 examined buffalo were infected with *T. vitulorum*. Mixed infection with ova of *Toxocara* sp. and *Strongyloides* sp. could be due to their common prenatal and transmammary route of infection (14).

As trematod, we recognized *Fasciola* spp. eggs in faecal samples of buffalo, with low percentage of infection (3.15%).

In the Philippines, the buffaloes are susceptible to infection with *Fasciola* spp., the infection affecting young and old animals (33), there was a drift of a lower fluke burden and faecal egg counts in naturally infected buffaloes than in cattle. And pre patent period of *F. gigantica* in cattle is briefer than in buffaloes. And buffaloes are more resistant than cattle to *F. gigantica*.

Moniezia spp. eggs are recognized in two fecal samples in this study (1.26%). (12) found recorded of trematodes and nematodes spp. while no cestodes were detected.



Many aspect may be guilty in the distribution of infection in the present study to those studies, such as hygienic measures, cruelty of infection, season of examination and breed of the calves. These factors may act to increase the risk factor associated with prevalence and transmission of parasite in buffaloes.

The complete absence of some species from feces of calves might be due to the age of calves, management and presence of intermediate host in the area.

دراسة تشخيصية لطفيليات المعدة والامعاء لجاموس مدينة الديوانية

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الخلاصة

اجريت هذه الدراسة لتشخيص انتشار طفيليات المعدة والامعاء في الجاموس في مدينة الديوانية سنة 2015 بواسطة فحص البراز. اذ فحصت 85 عينة براز، 74% منها وجدت مصابة بنوع واحد او اكثر من طفيليات المعدة والامعاء، *Eimeria spp.* 38% (*E. brasiliensis* و *E. zuernii*)، *Cryptosporidium* spp. 20.63% ، *Trichostrongylidae* 7.56% ، *Trichuris spp.* 3.78% ، *Toxocaravitulorum* 0.63% ، *Fasciola spp.* 3.15% و *Moniezia spp.* 1.26%.

من بين الاصابات المسجلة لطفيليات المعدة والامعاء في الجاموس المصاب، سجلت الاصابات المشتركة. كما لوحظ ارتفاع نسب الاصابة في الاجواء الممطرة الباردة مقارنة مع الاجواء الدافئة. رافق الاسهال مع الاصابات باكياس البوغيات الخبيثة.

معظم حالات الاصابة تراكمت مع ظهور اعراض الاسهال في الجاموس، مما يؤثر على الحالة الصحية للحيوانات المصابة ومعدل استهلاكها للعلف وبالتالي على انتاجها ومعدلات النمو ومدى الاستفادة من الاعلاف التي يتناولها الحيوان المصاب، فضلا عن كونها مصدر لنشر الاصابة في نفس القطيع والقطعان المجاورة ومناطق الرعي. لذا جريت هذه الدراسة لجذب انتباه المربين والاطباء البيطريين نحو اهمية الاصابة بطفيليات المعدة والامعاء



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