

# COMPARATIVE STUDY ON GOATS SARCOCYSTOSIS DIAGNOSTIC TECHNIQUES IN DOHUK GOVERNORATE

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## ARTICLE INFO

Received: 17 / 12 /2007  
Accepted: 20 / 7 /2008  
Available online: 14/6/2012  
DOI: [10.37652/juaps.2008.15378](https://doi.org/10.37652/juaps.2008.15378)

### Keywords:

Comparative ,  
goats ,  
sarcocystosis diagnostic ,  
Dohuk.

## ABSTRACT

Goat sarcocystosis of Dohuk governorate / north of Iraq – Kurdistan region , showed to be occur in percentage of 70 – 93 % for microscopic cysts( microcysts ) of *Sarcocystis* spp. of goats by several diagnostic techniques ( gross exam , trichinoscopy , squeezing method and post trichinoscopy drop exam ) which varies in their efficiency depending on organ and the parasitic stage that can be detected by the used technique .Seasonal effect showed to be not effect in the distribution of the infection and that very important in the epidemiology of the disease by depending statistical analysis. In addition, the study confirms the suitability of used techniques, as they are not to be highly expansive which make them reliable for epidemiological study.

## Introduction

*Sarcocystis* parasite is an obligate one which need two hosts to complete its life cycle (1). The parasite infected wide ranges of animals with host specificity (2) and its produced cysts in there intermediate host muscles ranged in their size from microscopic (microcyst) to macroscopic (macrocyt) which can observed by naked eyes (3) . There are various diagnostic techniques for detection the parasite which are varies in there requirement and difficulties (4), and these are the histological technique (5), gross exam ( 5, 6 ) ,trichionoscopy ( 5 ,7 ) squeezing method (4) and several hematological and immunological techniques (8,10, 11) The current study done to investigate the efficiency of four methods which are

gross exam , trichinoscopy , post trichinoscopy drop exam and squeezing method for detection goats sarcocystosis in Dohuk governorate for the first time .

## Materials and methods

1- Samples collecting:- One hundred samples collected randomly in combination of gross exam for presence of macrocysts of sarcocystosis from local governmental Dohuk abattoir for the period from month 1 to 4 of 2007 ( 25 samples / month ) , each sample consist from 3 pieces from the same animal , each piece taken from skeletal muscles, esophagus , and diaphragm of slaughtered endogenous goats and transfer coolly to vet. Med. College laboratory for further studies.

2- Each single sample treated as follow:-

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a- Re exam for presence of macrocysts of sarcocystosis.

b- Each three organ predicated to trichinoscopy as by Scott (5) and Daoud (7), post trichinoscopy drop exam (9) and squeezing method (4)

3- Histological routine method with staining by H. & E. (12) done for just three samples for improvement of the microcysts with its distinguished capsule.

4- The data tabulated and statistical analysis.

### Result and discussion

The total percentage of infection with caprine sarcocystosis in endogenous goats of Dohuk governorate reach 93% depending on targeted organ and the used method ( tab. 1 ) and that may be related to what was seen in these method as in gross exam where no macrocytic cysts observed and that could be attributed to little numbers which were taken in combination of low age of slaughter animals and that disagree with previous study ( 13 ) in goats of Sulaimaniah when he observed just 2% of macrocytic cysts . In, contrast the trichinoscopy detected disease with 70 – 80 % ( tab. 1 ) depend on organ where the microcysts( fig. 1 ) of the parasite were detected in various size or shape . the cysts seen in high percentage in the skeletal muscle , diaphragm and lately within the esophagus (tab.1 ) and that could be explain by the structure of these organ where the fascia of the esophagus prevent the observation of parasitic cysts . These result relatively

agree with previous studies (4,14 ) while it slightly below that of Mohammad ( 13 ) in goats . Although the results of post trichinoscopy drop exam which depend the seen of cysts cytozoites of the parasite ( fig.2 ) elevate the percentage of diagnosis ( 89 – 92 % ) in relation to used organ ( tab. 1 ) and that agree with previous study ( 9 ) when this method used for the first time in goats of Libya ( 98 % ) which improved the efficiency of this method in combination of its simplicity and its requirement Lately the squeezing method showed percentage of 86 – 93 % of parasite diagnosis as it depend on observation of parasite cystozoites also which release from there cysts under pressure of presser used in this method and that agree with Al – Bayati ( 4 ) in his study on bovine , while the organ also affect the results due to same probable reason within trichinoscopy as above .The total percentage of sarcocytosis in goats of Dohuk reach in total 93 % and that agree with previous studies ( 9 , 13 , 14 , 15 ) and that very important for the epidemiology of the disease Finally the number of positive goats sarcocystosis cases in related to months of study revealed significant according to diagnostic used method ( squeezing , post-trichinoscopy and lately trichinoscopy ) , while the ratio of infected cases per month show no significant differences and that agree with previous study ( 9 ) and in contrast to effect of months which observed by Mohammad ( 13 ) and that may be argument scientifically as the parasite is

intracellular in their inter-mediate hosts which protected it from ecological effects rather than the number of studied samples .

### Conclusion and recommendation

The study improved the efficiency of used diagnostic methods in the study of goats sarcocystosis which occur in high percentage indicating the wide distribution of the disease in the area for the first time in Dohuk governorate in Kurdistan region – Iraq, which also related to the presence of the final host ( *Cannidae* & *Felidae* ) which is very important for public health and more expanded study to cover various aspects of this disease need

### Acknowledgement

Many thanks to staff member of Dohuk abattoir for their helpful in providing sampling.

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**Table (1):- The total positive goats sarcocystosis cases in related to examine organs.**

Examine organ	Goats sarcocystosis diagnostic methods			
	Gross examine	Trichinoscopy	Squeezing method*	Post trich..drop exam*
	Positive / total	Positive / total	Positive / total	Positive / total
Esophagus	0 / 100	70 / 100	86 / 100	90 / 100
Skeletal muscle	0 / 100	80 / 100	93 / 100	89 / 100

Diaphragm	0 / 100	79 / 100	93 / 100	92 / 100
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\*Significant (P<0.05)

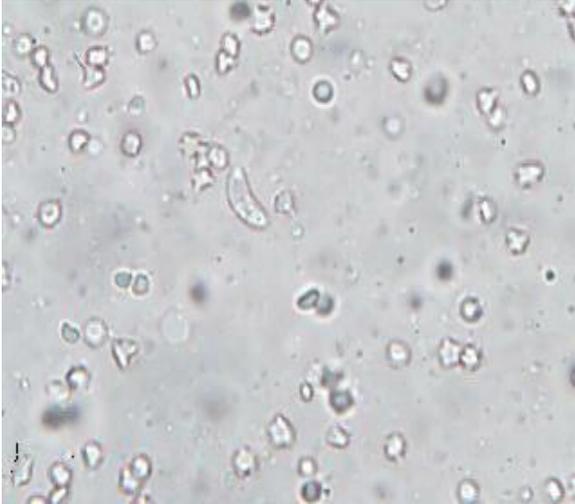
**Table ( 2 ) :- Number of positive goats sarcocystosis cases in related to month and used diagnostic methods.**

Post trichino.* drop exam	Squeezing*	Trichinoscopy	Gross Exam	Method of diagnosis			
				Month			
				1	2	3	4
22	17	18	-	1	2	3	4
23	22	17	-	2	3	4	1
23	21	15	-	3	4	1	2
22	24	20	-	4	1	2	3
23	23	20	-	1	2	3	4
22	24	20	-	2	3	4	1
23	22	21	-	3	4	1	2
21	24	19	-	4	1	2	3
24	22	19	-	1	2	3	4
22	24	22	-	2	3	4	1
23	23	20	-	3	4	1	2
23	24	18	-	4	1	2	3

Significant (P < 0.05)



**Fig.(1): Sarcocystosis cyst of Goats inside skeletal muscle by Trichinoscopy technique ( X 10).**



**Fig. (2):** Cystozoites of goat Sarcocystosis by squeezing method (x40).

## دراسة مقارنة في التقنيات التشخيصية لداء الحويصلات الصنوبرية في معز محافظة دهوك

، سعد محي ألبياتي

### الخلاصة

ان داء الحويصلات الصنوبرية ينتشر في محافظة دهوك - كردستان العراق في النوع الذي يصيب المعز بنسبة 70 - 93 % بالنوع المجهري اعتمادا على التقنية المستخدمة بالتشخيص والعضو المستخدم عند الفحص وأوضحت الدراسة أن طريقة فحص العصارة وفحص القطرة ما بعد فحص منظار الشعريات.

وأخيرا فحص منظار الشعريات هي ملائمة لملاحظة أكياس الطفيلي المجهرية أو الحويصلات المتحررة منها باعتماد مختلف أنواع عضلات المضيف الوسطي (المعز). وأكدت الدراسة أن نسبة انتشار المرض لا تتأثر بأشهر السنة لكون الطفيلي، وأخيرا أكدت الدراسة أن التقنيات المستخدمة يمكن اعتمادها في الدراسات الوبائية لانخفاض كلفتها المادية ودقتها العالية فضلا عن سرعتها.