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**STUDIES ON BLOOD PARASITES OF SHEEP  
AND GOATS AT QASSIM REGION, SAUDI ARABIA**  
(With 2 Tables)

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دراسات عن طفيليات الدم بالغنم والماعز بمنطقة القصيم  
بالمملكة العربية السعودية

طارق المتناوي

خلال الفترة الزمنية بين عام ١٩٩٤-١٩٩٧ تم فحص ٥٢٣ حيوان (٣٩١ غنم و١٣٢ ماعز). وقد أفادت الدراسة أن هناك نوع واحد من طفيليات الدم الذي يصيب الغنم في هذه المنطقة وهو ثيليريا هرسى. وقد وجد كل من البيروبلازم والشيزونت في خلايا الدم الحمراء وخلايا الليمفوسيت على التوالي في كل عينه. بالنسبة لدراسة التواجد الموسمي للثيليريا هرسى، فقد كانت أعلى نسبة أصابه في فصل الخريف، ومتساوية في فصلي الشتاء والصيف، وأقل نسبة أصابه سجلت في فصل الربيع. بالنسبة لأنواع الغنم تحت الدراسة؛ فقد كانت أعلى نسبة أصابه سجلت في الغنم السوداني، بينما لم يوجد أي فرق معنوي في نسبة الإصابة بين كل من الغنم النجدي والنعمي. وجدت أجسام دائرية صغيرة وتأخذ صبغه الجيمسا في خلايا الدم الحمراء في نسبة ١% من الحالات المفحوصة ولم يتم تصنيفها.

**SUMMARY**

Examination of 523 blood samples (391 sheep and 132 goats) collected from Qassim Region in a period from 1994 to 1997, revealed that *Theileria hirci* seems to be the only blood parasite infecting sheep and goats in this area. The overall infection percentage with that parasite among sheep and goats was 20.46% and 7.57% respectively. The parasite was mostly prevalent during the Autumn season, nearly equal in Winter and Summer seasons, while the infection with the parasite was minimum in the Spring season. The Sudanese sheep exhibit the highest

infection rate with *T.hirci*, while there is no significance different in the infection rate between the Najdi and the Naeimi sheep. Small, round, basophilic granules in the RBCs were observed in 1% of the examined blood samples, it is not identified and it needs further investigations.

**Key words:** *Blood Parasites, Theileria hirci, Sheep, and Goats, Al-Qassim, KSA.*

## INTRODUCTION

Sheep and goats are the main animal source in the Kingdom of Saudi Arabia. Their numbers according to the estimation of the Saudi Ministry of Agriculture and Water in 1988 are 6 187 747 sheep, and 3 486 715 goats. Mutton and goat meat is the preferred meat in the country especially at Islamic festivals and other social occasions.

There are two main breeds of sheep at Qassim Region; the Najdi and Naeimi breeds. The former is the local and the oldest breed at Al-Qassim Region, while Naeimi sheep is the foreign and newly adapted breed brought from the northern part of KSA to Al-Qassim area. It is famous between Badweens and farmers that the Naeimi sheep is more resistant than the Najdi one in the Central Region.

The aim of this investigation is to study the prevalence and the seasonal incidence of the blood parasites affecting sheep and goats in the area. Also, to study the susceptibility of the two breeds of sheep against the natural infection with ovine and caprin blood parasites.

## MATERIAL and METHODS

A survey on the blood parasites of sheep and goats was conducted in a period of 3 years (from 1994 to 1997). The samples were collected from 391 sheep and 132 goat. All the examined goats were local breeds, while the examined numbers of sheep were Najdi (149), Naeimi (103), Sudanese (26), and unidentified breed (113). All the animals were females and of various ages (one month to 5 years).

All the investigated animals were sick and brought to Al-Qassim Vet. Dig. Lab. Minist. Agric. at Bureidah province for the routine examination. The animals were brought in a recumbent state or freshly dead. Slides were directly prepared from the ear vein blood (thin and thick films), if the animal was living, and the impression smears were prepared from the prescapular lymph nodes, spleen, liver, kidney, and



the heart blood of the examined animals after the PM (Kreier and Baker, 1987). The slides were left to dry, fixed in methanol and stained by freshly prepared Giemsa stain for 45 min. (Levine, 1985). The observed parasites were identified according to the characters described by Levine, (1985); Brown, (1990); Kreier, (1994) and Soulsby, (1968).

## RESULTS

During a survey in a period of 3 years, *Theileria hirci* was reported from (80) 20.46% out of 391 examined sheep and (10) 7.57% out of 132 goats. It has been found that the incidence of *T.hirci* among the two hosts was high during the Autumn season and the infection rate among sheep was double that of goats (30.76% and 14.70% respectively). While the infection rate was nearly equal during the Winter and Summer season in the two hosts. Also, it has been found that the incidence of the parasite reach the minimum during the Spring season, where it was 5% in sheep and 0% in goats (Table 1).

In all the examined samples Koch's blue bodies were observed in the smears prepared from the prescapular lymph node and spleen. Also, the parasite was detected in the impression smears prepared from other organs (liver, kidney, lung, and the heart blood). Parasitized RBCs with the piroplasm sometimes were observed scattered in several internal organs.

Regarding to the susceptibility of the different breeds of sheep to the natural infection with *T.hirci*, it has been found that the incidence was higher in the Sudanese sheep than the other examined breeds (Table 2). Naeimi breed was found to be more susceptible to the infection than Najdi one, but the difference was not significant (23.3% and 20.80% resp.)

In a low percentage (1%) of the examined blood of sheep and goats, small, round, basophilic granules were observed in the erythrocytes. It was similar to the *Anaplasma* parasite. It was not identified and preserved for further studies.

## DISCUSSION

During this study only *T.hirci* was clearly demonstrated in the blood and tissue smears of the infected sheep and goats. The incidence of the parasite in the present study was considered the second record

from the Kingdom, where Hussein *et al* (1991) was the first to record the parasite from native sheep and goats in Saudi Arabia.

It has been found that the overall infection percentage with *T.hirci* in the present study was 20.46% in sheep and 7.57% in goats. Hussein *et al* (1991) reported the incidence in goats, it was higher than reported from sheep at Qassim Region (13.3% and 6.7% resp). Moreover, the latter authors randomly examined small number of sheep and goats (15 for each) from Bureidah province and they don't mentioned the season of their study.

In the present study, *T.ovis* was not observed in the examined sheep and goats while it was recorded in the study of Hussein *et al* (1991) with 20% infection rate in sheep and 40% in goats. Also, the parasite was recorded from Jeddah (Ghandour *et al*, 1989) with low incidence rate; and from eastern and northern region by Diab *et al* (1984).

*T.ovis* was not recorded in this study might be due to that the parasite was considered non pathogenic blood parasite for sheep and goats, and the animals submitted to this study were only sick and logically they were carried the pathogenic species which *T.hirci*.

During this study, it was noticed that 1% of the examined blood samples of sheep and goats had *Anaplasma* like bodies in the RBCs. In fact, it might be *Rickettsia* or *Eperythrozoon*. Specific identification is difficult on the basis of specimens seen in blood smears. *Eperythrozoon ovis* was previously recorded from sheep and goats in the kingdom by Diab *et al*, (1984) and Hussein *et al*, (1991).

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**Table (1): Seasonal incidence of T.hirci affecting sheep and goats at Qassim Region.**

SEASON	SHEEP			GOATS		
	No. Exam.	+ve. No.	%	No. Exam.	+ve No.	%
Winter	105	21	20.00	46	3	6.52
Spring	60	3	5.00	21	0.00	0.00
Summer	122	24	19.67	31	2	6.45
Autumn	104	32	30.76	34	5	14.70
Total	391	80	20.46	132	10	7.57

**Table (2): Incidence of T.hirci among different breeds of sheep at Qassim region.**

BREED	No. Exam.	+ve No.	%
Najdi sheep	149	31	20.80
Naeimi sheep	103	24	23.30
Sudanese sheep	26	8	30.76
Unidentified sheep	113	17	15.04
Total	391	80	20.46
Goats	132	10	7.57

