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Blood Parasites of Sheep and Goats at Al-Qassim Region, Saudi Arabia

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ABSTRACT

Blood samples of 523 which including 391 sheep and 132 goats were examined in Al-Qassim Region, Saudi Arabia from 1994 to 1997. *Theileria hirci* seems to be the only blood parasite infecting sheep and goats in this are. The overall infection rate was recorded as 20.46% (80/391) in sheep and 7.57% (10/132) in goats. The highest prevalence was recorded during the autumn season, nearly equal in winter and summer seasons, while it was the minimum in the spring season. The Sudanese sheep exhibits the highest infection rate with *T. hirci,* while there is no significance difference in the infection rate between the Najdi and the Naeimi sheep.

INTRODUCTION

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

There are two main breed of sheep at Al-Qassim Region, the Najdi and Naeimi breed. 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 Saudi Arabia 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 of the blood parasites in different reason and breeds of sheep and goat in this area. Also, to study the susceptibility of the two breeds of sheep against the natural infection with ovine and caprin hematozoa.

MATERIALS AND METHODS

A survey on the blood parasites of sheep and goats was conducted for a period of three years from 1994 to 1997. The samples were collected from 391 sheep and 132 goats. 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 female and of various age (one month to 5 years).

All the investigated animals were sick and brought to Al-Qassim the Veterinary Diagnostic Laboratory, Ministry of Agriculture 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 alive, and the impression smears were prepared from the prescapular lymph nodes, spleen, liver, kidney and the hear blood of the dead animals according to the method described by Kreier and Baker (1990). The slides were left for air dried, 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 (1982).

RESULTS

The overall prevalence of Theileria hirci was recorded as 20.46% (80/391) in examined sheep and 7.57% (10/132) in goats. It has been found that the prevalence of T. hirci among the two hosts was higher during the autumn season and the infection rate among sheep was almost double than that of goats (30.76% and 14.70% respectively) in this season. 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 no prevalence was recorded in goats (Table 1).

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

Table 1. Seasonal incidence of *Theileria hirci* affecting sheep and goats at Al-Qassim Region in Saudi Arabia.

Season	Sheep			Goats		
	number of samples	positive	%	number of samples	positive	%
Winter	105	21	20.00	46	3	6.52
Spring	60	3	5.00	21	0	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

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 (30.76%) in the Sudanese sheep than the other examined breeds (Table 2). Naeimi breed was found to be more susceptible (23.30%) to the infection than Najdi (20.80%) breed, but the difference was not significant.

Table 2. Incidence of *Theileria hirci* among different breeds of sheep at Al-Qassim Region in Saudi Arabia.

Breed	Number of examined	Number of positive	%
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

In small percentage (1%) of the examined blood of sheep and goats, small, round, basophilic granules were observed on 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 indigenous sheep and goats in Saudi Arabia. It has been found that the overall infection rate of *T. hirci* in the present study was 20.46% in sheep and 7.57% in goats, whenever, Hussein et al. (1991) reported the incidence in goats was higher than reported from sheep at Al-Qassim Region (13.3% and 6.7% respectively). This difference in incidence could be due to the fact that the latter author randomly examined small number of sheep and goats (15 for each) for Bureidah Province and they do not 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. The parasite was also 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 may be due to 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 carried the pathogenic strain i.e. *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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