

## Communication

zones où la transmission de la trypanosomose cameline est importante ? Cela pourrait provenir d'un manque d'attractivité des petits ruminants pour les Tabanides et/ou les Hippoboscides vecteurs.

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JACQUIET (P.), CHEIKH (D.), THIAM (A.), DIA (M.L.). Trypanosomosis due to *Trypanosoma evansi* (Steel 1885), Balbiani 1888 in small ruminants in Mauritania : experimental inoculation in the laboratory and field survey results. *Revue Élev. Méd. vét. Pays trop.*, 1993, **46** (4) : 574-578

In order to define the eventual role of small ruminants in the epidemiology of *T. evansi* infection in Southern Mauritania, the following experiments were carried out : the intravenous inoculation of a ewe and a goat with a local strain of *T. evansi* isolated from a dairy camel ; surveys of small ruminant flocks which graze with infected camels in the South of the Trarza region. The experimental inoculation allowed to show that local sheep and goats are receptive. Only the ewe showed a clinical episode with loss of weight and abortion. During 220 days after inoculation the blood of the goat remained constantly infectious for the mouse whereas in the same period the ewe's blood showed an alternation of infectious and non-infectious phases. However in the field, none of 381 blood smears of small ruminants (207 goats, 174 sheep) were positive and none of the 187 serums (109 goats, 78 sheep). Therefore, it seems that the small ruminants of the South Mauritania do not play any role in the epidemiology of *T. evansi* camel trypanosomosis even if they are receptive to experimental inoculation.

**Key words :** Goat - Sheep - Trypanosomosis - *Trypanosoma evansi* - Pathological survey - Inoculation methods - Serology - Indirect immunofluorescence - Epidemiology - Mauritania.

## Presence of ketones in the serum of *Trypanosoma evansi* infected camels (*Camelus dromedarius*) in the Sudan

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HUSSEIN (Kamal S.M.), GASMIR (Gundi S.). Présence de cétones dans le sérum de dromadaires (*Camelus dromedarius*) infectés par *Trypanosoma evansi* au Soudan. *Revue Élev. Méd. vét. Pays trop.*, 1993, **46** (4) : 578-579

Cent échantillons sanguins et deux échantillons d'urine prélevés chez des dromadaires (*Camelus dromedarius*) ont été analysés au Laboratoire de Recherche vétérinaire de l'Etat Oriental de Kassala, au Soudan, pour rechercher la présence de cétones. Les cinquante sérums provenant d'animaux infectés par des trypanosomes ont donné des résultats positifs. Sur les cinquante autres provenant de chameaux non infectés, 45 présentaient des résultats négatifs. Les cinq échantillons restant positifs, l'étaient également au test du chlorure de mercure.

**Mots clés :** Dromadaire - *Camelus dromedarius* - Trypanosomose animale - *Trypanosoma evansi* - Cétone - Sérum - Soudan.

## Introduction

Camel owners in Eastern Sudan claim that in camel trypanosomes are associated with a characteristic pungent odour of the urine, just like the smell of bad water melon. HUNTER (2) detected a small amount of ketones in the urine of *T. evansi* positive camels. In the present study serum and urine samples were used for further elucidation of this feature.

## Materials and Methods

Hundred blood samples were collected from the jugular vein at the Veterinary clinic or from different localities around Kassala town during the year 1990-1991. Blood was collected in vacutainers containing EDTA and plain vacutainers for serum separation.

Sera were kept at - 20°C until used. From each blood sample, wet film, thin smear and buffy coat (PCV) preparations were examined for detection of trypanosomes. All sera were examined by the mercuric chloride test. One gram of mercuric chloride was dissolved in 250 ml of distilled water; 5 ml from this solution was made up to 500 ml with distilled water. One ml of this solution was put into each of two test tubes, and 20 µl of serum was added to one test tube and the other was left as a control. White turbidity indicated a positive reaction. According to these examinations, the sera were divided into three groups. In group I, the trypanosomes and mercuric chlori-

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de tests were positive. In group II no trypanosomes were found, but the sera were mercuric chloride test positive. In group III, all tests were negative.

### Rapid spot test for serum ketones

This test was done according to the Manual of Veterinary Investigation (3). Three grams of sodium nitroprusside were mixed with 100 g of ammonium sulphate and 50 g of anhydrous sodium carbonate. An amount of 0.1 g of this powder was put on a white porcelain tile, 40  $\mu$ l of serum or urine were added and observed for 5 min. to detect any change of colour. Violet colour indicated a positive reaction. No change in colour indicated a negative reaction (absence of ketones). All serum groups I, II and III were tested in this way.

### Results

Results are presented in table I. It was observed that the velocity and intensity of colour formation were proportional to the putative ketone concentration present in the serum. In group I, the colour changed rapidly to intense violet within one minute. In group II, a faint colour was observed within two to three minutes, whereas in group III, no change was observed even after five minutes.

### Discussion and Conclusion

Earlier studies with the "humoral" group of trypanosomes ascribed death of the host to a progressive and terminally fatal hypoglycaemia, caused by high carbohydrate consumption of the parasite (4). This may explain our findings of ketones in the serum of trypanosome infected camels. Ketone bodies are referred to as acetoacetate,  $\beta$ -OH-butyrate and acetone. Because nitroprusside does not react with  $\beta$ -OH-butyrate, the ketone bodies found could be either acetoacetate, acetone or both.

Despite the small number of urine samples taken from trypanosome-infected camels, we believe that the presence of ketones in the urine was due to the resultant increase in blood levels (1). The faint reaction observed in group II needs further investigation.

Thus, it could be concluded that ketone bodies are found in the serum of trypanosome infected camels and that the pungent odour of the urine could be attributed to their presence.

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**TABLE I** Ketone test on sera and urines of normal and trypanosome infected camels in Kassala Eastern State-Sudan.

	Number of samples	Presence of trypanosomes in wet and thin smear	Trypanosomes in buffy coat	Serum mercuric chloride test	Presence of ketones
Serum					
I	50	+	+	+	XXXX
II	5	-	-	+	X
III	45	-	-	-	-
Urines	2	+	+	+	X

× indicates concentration of ketone bodies.

- : negative ; + : positive.

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**HUSSEIN (Kamal S.M.), GASMIR (Gundi S.)**. Presence of ketones in the serum of *Trypanosoma evansi* infected camels (*Camelus dromedarius*) in the Sudan. *Revue Elev. Méd. vét. Pays trop.*, 1993, **46** (4) : 578-579

One hundred serum and two urine samples collected from camels (*Camelus dromedarius*) were analysed at the Eastern State Veterinary Research Laboratory, Kassala, Sudan, for the presence of ketones. All fifty sera from trypanosome infected camels gave positive results. Fourty five out of the fifty serum samples of trypanosome negative camels showed negative results. The five positive samples were also positive with the mercuric chloride test.

*Key words* : Dromedary - *Camelus dromedarius* - Trypanosomosis - *Trypanosoma evansi* - Ketone - Sera - The Sudan.