

A serological survey for *Toxoplasma* antibodies in cattle, sheep, goats and camels (*Camelus dromedarius*) in the Sudan

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RÉSUMÉ

ZAIN ELDIN (E. A.), ELKHAWAD (S. E.) et KHEIR (H. S. M.). — Enquête sérologique sur les anticorps de *Toxoplasma* chez les bovins, les moutons, les chèvres et les dromadaires au Soudan. *Rev. Elev. Méd. vét. Pays trop.*, 1985, 38 (3) : 247-249.

Une recherche sérologique des anticorps de *Toxoplasma* a été conduite sur 4 espèces animales dans les régions du Centre et du Kordofan au Soudan. La technique d'hémagglutination passive en microméthode a été employée.

L'importance respective des sérums à anticorps positifs a été la suivante : 63 p. 100 pour les chèvres, 54 p. 100 pour les dromadaires, 40 p. 100 pour les bovins, 34 p. 100 pour les moutons.

Les résultats obtenus avec le test de fixation du complément sur des prélèvements positifs ne diffèrent pas de ceux obtenus par le test d'hémagglutination indirecte.

Mots clés : Bovin - Ovin - Caprin - Dromadaire - *Toxoplasma* - Anticorps - Soudan.

SUMMARY

ZAIN ELDIN (E. A.), ELKHAWAD (S. E.) and KHEIR (H. S. M.). — A serological survey for *Toxoplasma* antibodies in cattle, sheep, goats and camels (*Camelus dromedarius*) in the Sudan. *Rev. Elev. Méd. vét. Pays trop.*, 1985, 38 (3) : 247-249.

A serological investigation for *Toxoplasma* antibodies in 4 animal species from Kordofan and central regions of the Sudan was carried out using the micro method of the indirect haemagglutination test. The prevalence of antibody positive sera were the following : 63 p. 100 for goats, 54 p. 100 for camels, 40 p. 100 for cattle, and 34 p. 100 for sheep. Results obtained by the complement fixation test for seropositive specimens did not differ from those obtained by the indirect haemagglutination test.

Key words : Cattle - Sheep - Goat - Camel - *Toxoplasma* - Antibodies - Sudan.

INTRODUCTION

Toxoplasmosis is known as a major cause of abortion, stillbirth and neonatal mortality in sheep, goats and several other species of domestic animals (1, 2, 3, 5). Worldwide reports indicate high prevalence of *Toxoplasma* antibodies in livestock (9). Human *Toxoplasma* infection is attributed to man use of animals as pets or for food. The handling and eating of raw meat infected with cysts of *Toxoplasma* has been implicated as a source of infection (4). The relationship between cats, the definitive host of

Toxoplasma and the prevalence of toxoplasmosis in man and other non-feline animals has also been confirmed (7, 10, 11).

Reports on toxoplasmosis in the Sudan are lacking. This investigation is therefore intended to show the prevalence of *Toxoplasma* antibodies in sheep, goats, cattle and camels in the Sudan.

MATERIALS AND METHODS

Blood samples were collected from sheep, goats, cattle and camels at slaughter houses in

Kordofan and central regions during 1982 and 1983. Samples were taken at random from 576 sheep and 134 goats, 2-3 years old, 175 cattle, 3-5 years old and 204 camels 5-7 years old. All sera were stored at -20°C till they were examined. Sera were tested by the micro method of the indirect haemagglutination test (IHA), according to the bioMerieux Toxo-HA Kit (*) procedures. Treatment of serum with Mercaptoethanol (2-ME) was carried out one day before running the test to reduce IgM. Each batch of specimens was tested in parallel with standard positive control serum and control antigen (nonsensitized red cells). A positive reaction of $\geq 2+$ at $\geq 1:40$ dilution corresponds to an immune response for all animal species.

Random seropositive specimens were tested by the tube complement fixation test (CFT) to confirm the results obtained by the IHA.

RESULTS

The distribution of antibodies to *Toxoplasma* among the animal species examined is shown in table n° I. The highest antibody prevalence was found among goats. Of the 134 goats tested, 85 (63 p. 100) were seropositive. The sera of 54 p. 100 of 204 camels, 40 p. 100 of 175 cattle and 34 p. 100 of 576 sheep were positive for antibodies of *Toxoplasma*.

In general, the highest IHA titres were found in sheep and camels ($> 1:2650$). On the other hand, the greatest number of seropositive animals of all species were reactive at low titres of $1:40$ and $1:80$.

Results obtained by the CFT did not differ from those obtained by the IHA test.

No significant age difference in antibody titres was observed among the animals tested.

(*) BioMerieux Laboratory Reagents and Products, Marcy-l'Etoile, France.

DISCUSSION

The present serological survey has indicated that livestock in the Sudan have considerably high *Toxoplasma* antibody titres (34-63 p. 100). Most animals examined originated from nomadic flocks from different areas and they were apparently healthy at *ante mortem* inspection.

The high prevalence of *Toxoplasma* antibodies among camels in this study is inconsistent with the findings of OKEN *et al.* (6) who did not detect seropositives among this animal species in Nigeria.

The results show a widespread of *Toxoplasma* among meat animals. The antibody titres in animals can often be linked to chronic infection. There is evidence that seropositive animals may harbour cysts of *Toxoplasma* in their tissues and muscles (3, 12). Although confirmed records on human toxoplasmosis in the Sudan are not available, yet from the present investigation among animals, it can be assumed that human exposure to the disease may be high.

There are several means by which domestic animals can be exposed to *Toxoplasma* infection. Wild felidae may contaminate the pasture, and domestic cats with close contact with livestock may contaminate water supply with *Toxoplasma* oocysts (8). Under Sudan conditions, the contact between domestic animals and house cats is not precluded. Besides, wild felidae and rodents are widespreading in nomadic pastoral areas.

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TABLE N° I - The prevalence of IHA antibodies among sheep, goats, cattle and camels in the Sudan

Species	Nb tested	Positive		Antibody titres						
		Nb	p. 100	1:40	1:80	1:160	1:320	1:640	1:1280	$\geq 1:2560$
Sheep	576	196	34	82	44	28	20	10	8	4
Goats	134	85	63	35	10	20	18	2	-	-
Cattle	175	70	40	10	26	15	15	4	-	-
Camels	204	111	54	42	24	16	9	8	6	6

RESUMEN

ZAIN ELDIN (E. A.), ELKHAWAD (S. E.), KHEIR (H. S. M.). — Encuesta serologica sobre los anticuerpos de *Toxoplasma* en los bovinos, los carneros, las cabras y los dromedarios en el Sudán. *Rev. Elev. Méd. vét. Pays trop.*, 1985, **38** (3) : 247-249.

Se efectuó una búsqueda serologica de los anticuerpos de *Toxoplasma* en 4 especies animales en las regiones del Centro y del Kordofan en el Sudán. Se utilizó la prueba de hemaglutinación pasiva en micrométodo.

La importancia respectiva de los sueros con anticuerpos positivos fué la siguiente : 63 p. 100 en las cabras, 54 p. 100 en los dromedarios, 40 p. 100 en los bovinos, 34 p. 100 en los carneros.

Los resultados obtenidos con la prueba de fijación del complemento sobre muestras positivas no son diferentes de los obtenidos por la prueba de hemaglutinación indirecta.

Palabras claves : Bovino - Carnero - Cabra - Dromedario - *Toxoplasma* - Anticuerpos - Sudán.

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