

## **Detection of Antibodies against *Toxoplasma gondii* and *Neospora caninum* in Dairy Camels from the Khartoum State, Sudan**

**Abdalla M. Ibrahim\*<sup>1</sup>, Ahmed A. Ismail<sup>2</sup>, Tamador-Elkhansa E Angara<sup>3</sup>,  
Osman M. Osman<sup>4</sup>**

<sup>1</sup> Department of Parasitology, College of Veterinary Medicine, University of Bahri,

<sup>2</sup> College of Veterinary Medicine Sudan University Science and Technology (SUST).

<sup>3</sup> College of Animal Production Science and Technology, SUST.

<sup>4</sup> Veterinary Research Institute, Khartoum, Sudan.

\*Corresponding author: E. Mail: [abdallami79772@gmail.com](mailto:abdallami79772@gmail.com) Tel: +249 912 679 772

### **ABSTRACT**

Toxoplasmosis and neosporosis are important causes of reproductive failure in humans and animals resulting in significant socio-economic losses worldwide. In addition to its importance as food animals for most of the rural areas in the Sudan, camels are recently introduced as dairy animals in some semi-intensive farms in the city centers such as Khartoum. The aim of this study was to avail data-regarding the sero-prevalence of *T. gondii* and *N. caninum* infection in camels raised for milk production in the Khartoum State. Two large dairy camel's farms in Eastern Nile and Bahri localities were sampled as well as the co-herded camels with dairy cows in dairy cattle farms in the state. A total of 61 dairy she-camels sera were collected from 13 dairy herds and examined for the evidence of anti-*T. gondii* and anti-*N. caninum* antibodies using the commercially available Latex Agglutination Diagnostic kits (LAT) and competitive Enzyme Linked Immunosorbent assay (cELISA). The study revealed that, the overall seroprevalence of *T. gondii* and *N. caninum* infection in dairy camels at herd level was 96.9% (10/13 herds) and 38.5% (5/13 herds) respectively. Their seroprevalence at individual level was 54.1% (33/61 She-camels) and 9.8% (6/61 She-camels). Approximately, 50% of the seropositive camels (16/33) reported an anti-*T. gondii* antibody titration of more than 1:8, and the highest level of antibody titration

reported in the present study was 1:32. Interestingly, camels were found to be relatively similar to cattle in the occurrence of *N. caninum* infection in this study, with percent inhibition ranging from 30% to 74%. Generally, this is the first serological evidence of *N. caninum* in Sudanese camels. The study concluded that camels in the Sudan are widely exposed to *T. gondii* and *N. caninum*. Thus, based on the feeding habitat of camel products, people in the Sudan should be aware of the possibility of hyper-prevalence of human toxoplasmosis through this important food animal. Research on clinical toxoplasmosis and neosporosis in Sudanese camels is recommended to evaluate the role of these parasitic abortifacients in the economical losses in camels industry and for building strategy of sustainable camel management and control.

**Keywords:** Seroprevalence, Toxoplasmosis, Neosporosis, Camels, Sudan.