Utilization of Crude and Recombinant ELISAs for Serodiagnosis of Camel Trypanosomosis in Sudan

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ABSTRACT

A serum-based epidemiological study using ELISA and Card Agglutination Test (CATT/T. evansi) was performed to update the seroprevalence of camel trypanosomosis and to evaluate the application of crude and recombinant antigen ELISAs. The advantage of TeGM6 antigen is that it is 100% identical to T. b. brucei GM6 and is highly conserved among salivarian trypanosomes. Therefore it might be useful in the detection of Trypanozoon, T. congolense and T. vivax. One hundred and eighty-nine blood samples were obtained from camels in different herds (148 samples) and local markets in the western part of Sudan (148 samples). ELISA was performed using T. evansi crude antigen and T. evansi recombinant antigen GM6 (rTeGM6-4r). Protein A was used as secondary antibody, while CATT/T. evansi was used as a control test. This resulted in varying degree of prevalence depending on the technique used as follows; CATT/T. evansi 39% (73/189), crude antigen ELISA 39% (73/189) and rTeGM6-4r ELISA 62% (118/189). Kappa value of rTeGM6-4r was 0.369 indicating a fair agreement with sensitivity of 54.24% and specificity 87.32%, while Kappa value of crude antigen was 0.7991 indicating a substantial agreement with sensitivity of 87.67% and specificity 92.24%. In conclusion, we found that camel trypanosomosis is highly endemic in camels in Sudan and that the rTeGM6-4r ELISA assays applied in this study has detected a higher number of positive samples confirming that it is not species-specific and could be used as a universal diagnostic antigen that can detect salivarian trypanosomes including T. evansi and T. vivax. Moreover, crude antigen was efficient for application in the serodiagnosis of camel trypanosomosis caused by T. evansi.

Keywords: dromedary camels, ELISA, serodiagnosis, Sudan, surra, trypanosomosis