Comparison of conventional and Real-time PCR assays for diagnosis of *Trypanosoma evansi* infection

Tahani, S. Behour[1]; Aboelhadid, S.M [2]; Mousa, W.M.A.[3] and Amin, A.S.[1]

1 Biotechnology Research Unit, Animal Reproduction Research Institute, Giza, Egypt

2. Parasitology Department, Faculty of Veterinary Medicine, Beni Suef University, Egypt

3. Parasitology Department, Faculty of Veterinary Medicine, Cairo University, Egypt

The corresponding author:

Shawky Mohamed Aboelhadid

Parasitology department, Faculty of Veterinary Medicine, Beni-Suef University, Beni-Suef 62511, Egypt

E. mail: drshawky2001@yahoo.com

TelFax: +2 082 2327982

Mobile: +2 01013694081

Abstract

This study was initiated to evaluate and compare two DNA based techniques (conventional and real-time PCR) for detection of *Trypanosoma evansi*. For this purpose, seventy three females' mice were divided into two groups. In group I, 21 mice were inoculated by 10^4 trypanosomes; in group II, 42 mice were inoculated with 10^2 parasites and 5 mice were kept as non-infected control. The pre-patent periods were followed daily by the three assays. Results showed higher sensitivities of PCR and real time PCR using both TBR1/2 and TeRoTat1.2 primer sets than giemsa stained blood films in early determination of pre-patent periods as early as 24 hours post infection. Following up the course of infection by giemsa stained blood films revealed three waves of parasitemia alternated with three waves of non-detectable parasite in blood. The molecular techniques were able to clearly detect *T. evansi* in chronic stages of low parasitemia (periods of non-detectable parasites) throughout the course of infection. By testing field samples, real time PCR was more reliable in detecting and quantifying very low parasitemia in clinical camels' blood samples than PCR. In conclusion, classical PCR with TBR is more sensitive than RoTat 1.2. RT-PCR with RoTat 1.2. is more sensitive than classical PCR with RoTat 1.2. RT-PCR with TBR and classical PCR with TBR have the same sensitivity. RT-PCR provides more convenient detection in field samples than conventional PCR. Thus, it can be considered more suitable for this purpose in addition to use for screening of newly introduced animals to exclude carriers and detect early infected animals.