

## ORT\_14 - Quantitative PCR (TcSAT-IAM System) as a diagnostic and therapeutic monitoring tool for Chagas disease: experience of the Chagas Disease Reference Service of the Instituto Aggeu Magalhães

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**Introduction:** Chagas disease (CD), caused by the protozoan *Trypanosoma cruzi* (*T. cruzi*), affects millions of people worldwide. The choice of laboratory techniques for diagnosis depends on the clinical stage of the disease. In acute infection, the diagnosis is made using direct parasitological techniques and, in inconclusive cases, IgM anti-*T. cruzi* can be used. In the chronic phase, the diagnosis is made using techniques that detect IgG anti-*T. cruzi*. However, these techniques have limitations, and molecular methods arise as an alternative for diagnostic confirmation.

**Objective:** The aim of this study was to monitor, by real-time PCR (qPCR), 28 individuals classified as cases and 49 individuals as negative, according to laboratory criteria, for acute phase of infection.

**Methodology:** The results of qPCR, using the TcSAT-IAM system, developed at the Chagas Disease Reference Service of the Instituto Aggeu Magalhães (SRDC/IAM) at Fiocruz-PE for the nuclear DNA target of *T. cruzi*, were compared with those of the classic techniques for the acute phase.

**Results:** The sensitivity and specificity of the TcSAT-IAM system were 57.14% (lower CI 39.07 and upper 73.49) and 85.71% (lower CI 73.33 and upper 92.9), respectively; positive and negative predictive values of 69.57% and 77.78%, respectively; accuracy of 75.32% and agreement considered moderate. However, of the 28, only 13 (46.43%) individuals had samples collected before or up to 3 days after starting treatment and, of these, all had positive results for the detection of *T. cruzi* DNA. The others already had, on average, 22 days of treatment when they had samples collected and sent for molecular diagnosis. Two months after starting treatment, all subjects tested negative for the detection of *T. cruzi* DNA. About 24 months post-treatment, of the 28 patients, 20 (71.43%) had samples tested for IgG anti-*T. cruzi* and qPCR. Of these, 14 (70%) had positive serology and only 1 (5%) individual had a positive qPCR result.

**Conclusion:** This demonstrates the relevance of using the TcSAT-IAM system for diagnosis and therapeutic follow-up in CD, associated with classic diagnostic techniques in the acute phase. It also demonstrates that the beginning of treatment, prior to the collection of the sample to be directed to qPCR, is related to the remission of the parasite load, interfering with the result of the molecular technique.

**Keywords:** *Trypanosoma cruzi*; Diagnosis; Real time PCR