# **Titre d’article**: Comparison of serological and molecular tests for detection of Trypanosoma evansi in domestic animals from Ghardaïa district, South Algeria

**Abstract :**

Trypanosoma evansi (T. evansi) is a hemoflagellate parasite that affects a broad range of mammalian hosts and that causes a disease called surra. Diagnosis of surra based on clinical symptoms alone is inaccurate. Therefore, a variety of serological and molecular diagnostic tests are used to assist in the detection of T. evansi infections. The aim of this study was to compare the diagnostic performance of four serological tests (CATT/T.evansi, immune trypanolysis, ELISA with purified variant surface glycoprotein RoTat 1.2 and with whole cell lysate) and two molecular PCR tests targeting sequences within the ribosomal genes locus (ITS1 TD PCR and 18S qPCR). Tests were carried out on blood samples from 161 dromedary camels, 93 horses, 129 goats, 168 sheep, 127 bovines and 76 dogs. Latent class analysis was carried out to calculate the sensitivity and specificity of each diagnostic test. Cohen’s Kappa test was used to assess the concordance between the different diagnostic tests. Overall positivity rates observed with the serological tests were as follows: 3.1 % with CATT/T.evansi, 4.9 % with ELISA/RoTat 1.2, 3.4 % with ELISA/whole lysate and 2.0 % with immune trypanolysis (TL). Among the 754 samples tested with the molecular tests, 1.7 % were positive with 18S qPCR and 1.3 % with ITS1 TD PCR. Cohen’s Kappa test showed agreement ranging from fair to substantial (k = 0.2-0.8) between serological diagnostic tests. However, it showed a perfect agreement (k = 0.868) between molecular diagnostic tests. Latent class analysis showed that all serological tests were 100 % sensitive, in contrast to the molecular tests with 47 % sensitivity. All tests, though, were highly specific (≥ 97 %). Given the persistence of circulating antibodies after cure, detectable by serological tests, it is recommend combining a serological and a molecular diagnostic test for accurate diagnosis of infection with T. evansi in domestic animals.