Comparative serum biochemical changes in Nigerian local dogs following single infection of drug-sensitive or multidrug-resistant *Trypanosoma congolense* or *Trypanosoma brucei brucei*

***C.F. Obi[1] , M.I. Okpala[1] , N. T. Emejuo[2] , I.O. Ezeh[1] , D.N. Onah[1] , R.C. Ezeokonkwo[1]**

[1]*Department of Veterinary Parasitology and Entomology, University of Nigeria, Nsukka, Nigeria.*
[2]*Department of Veterinary Pathology and Microbiology, University of Nigeria* *Corresponding Author: Chukwunonso.obi@unn.edu.ng; +2348063707096.

Background

Animal trypanosomosis is an important endemic disease in sub-Saharan Africa. Its control relies on chemotherapy, and resistance to trypanocides has been widely reported. A paucity of information exists on the pathogenicity of drug-resistant canine trypanosomes.

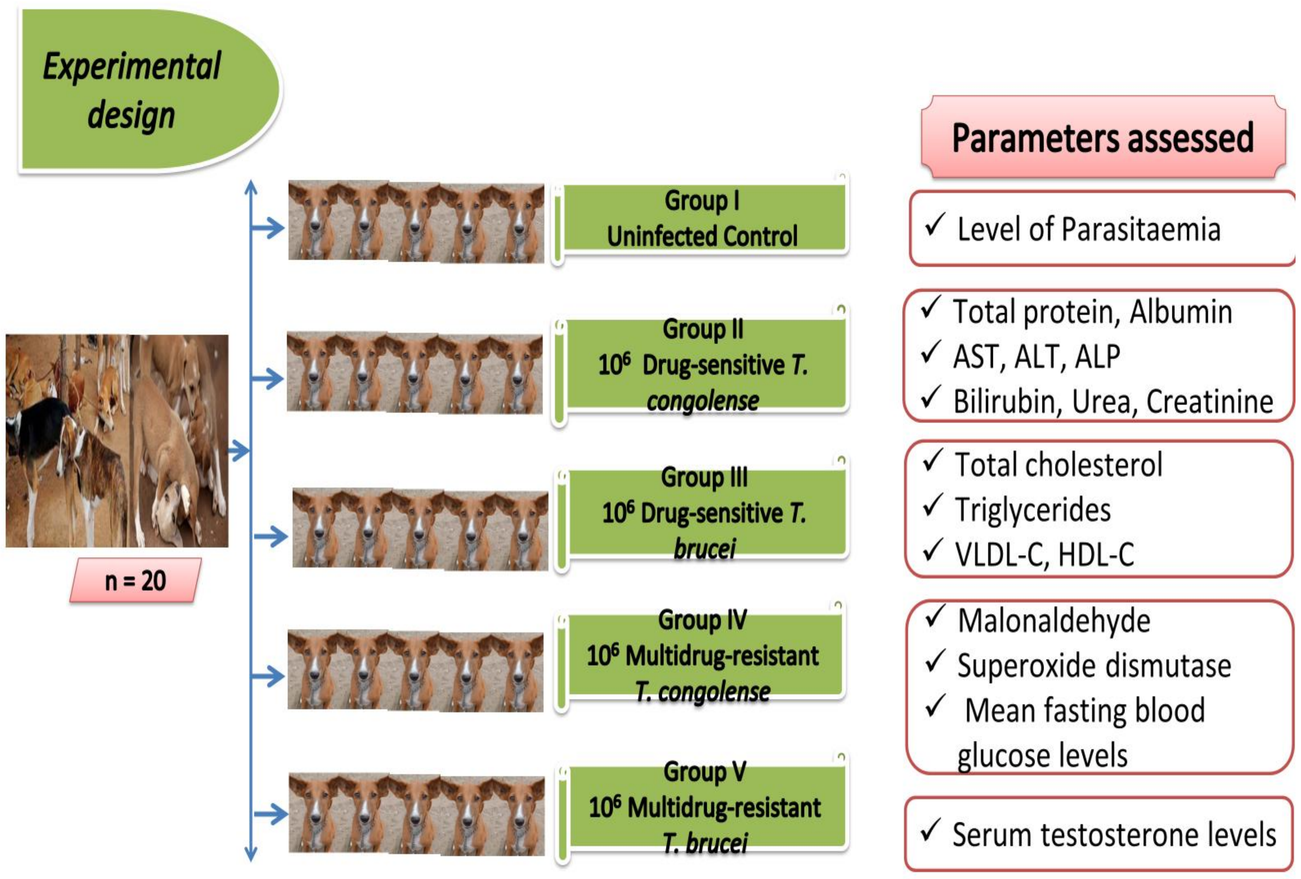
Objectives

To compare the serum biochemical changes in Nigerian local dogs infected with either drug-resistant or drug-sensitive *Trypanosoma brucei brucei* or *Trypanosoma congolense*.

Methodology

Experimental Trypanosomes:

- ✓ Multidrug-resistant *T.b. brucei* (DA CD_{50}=34.19 mg/kg; ISM CD_{50}=4.75 mg/kg)
- ✓ Multidrug-resistant *T. congolense* (DA CD_{50}=30.61 mg/ kg; ISM CD_{50}=3.96 mg/kg),
- ✓ Drug-sensitive *T.b. brucei* (DA CD_{50} = 2.49 mg/kg; ISM CD_{50} = 0.19 mg/ kg)
- ✓ Drug-sensitive *T. congolense* (DA CD_{50}=3.24 mg/kg; ISM CD_{50}=0.16 mg/kg).



AST - Aspartate aminotransferase
ALT - Alanine aminotransferase
ALP - Alkaline phosphatase
VLDL-C - Very low-density lipoprotein cholesterol
HDL-C – High-density lipoprotein cholesterol
MDA – Malonaldehyde
SOD - Superoxide dismutase
FBG - Mean fasting blood glucose levels
TEST - Serum testosterone levels

Results

The mean pre-patent period of groups II-V were 4.25, 3.5, 5.2, and 10.3 days respectively. Significant variations were observed in the serum biochemical parameters of the infected groups. Group V dogs had lower ($P<0.05$) mean AST, ALT, ALP, bilirubin, urea, creatinine, MDA, and higher ($P<0.05$) mean TP, SOD, FBG, and TEST than group III dogs (Figs. 1-3). However, these parameters did not differ statistically ($P>0.05$) amongst groups II and IV dogs.

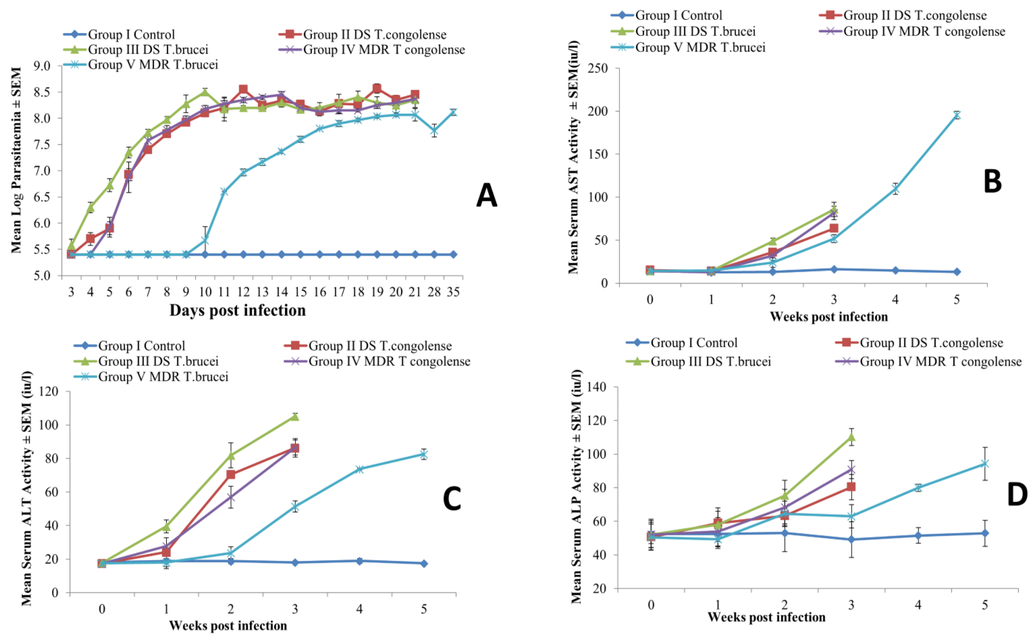


Fig 1: Mean daily parasitaemia levels (A), weekly AST (B), ALT (C) and ALP (D) activities of dogs infected with either drug-sensitive or multidrug-resistant *Trypanosoma brucei* or *Trypanosoma congolense*

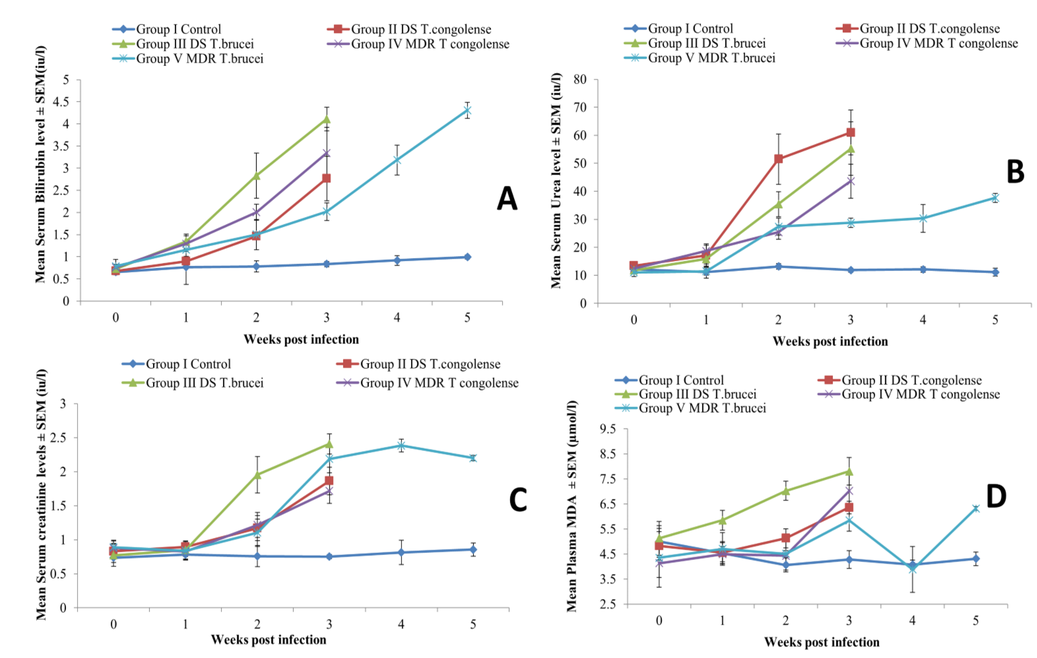


Fig 2: Mean weakly bilirubin (A), urea (B), creatine (C) and MDA (D) levels of dogs infected with either drug-sensitive or multidrug-resistant *Trypanosoma brucei* or *Trypanosoma congolense*

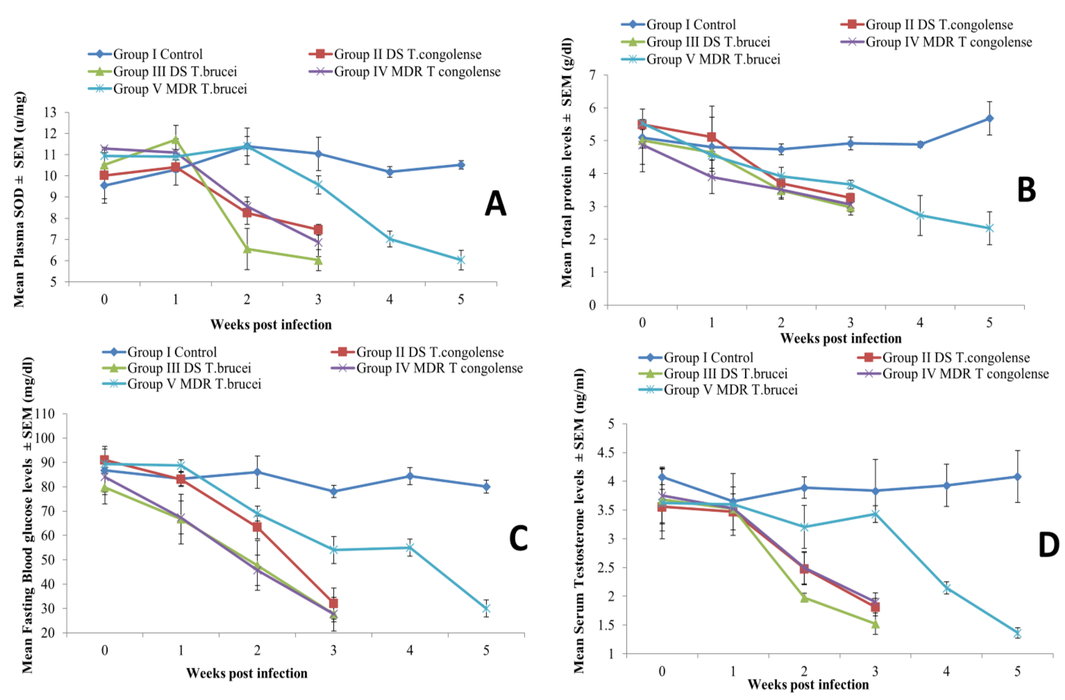


Fig 3: Mean weakly SOD activity (A), TP (B), FBG (C), and serum testosterone levels (D) of dogs infected with either drug-sensitive or multidrug-resistant *Trypanosoma brucei* or *Trypanosoma congolense*

Conclusion

Drug-sensitive *T. brucei* was more virulent, inducing severe serum biochemical changes than the multidrug-resistant *T. brucei.* The multidrug-resistant and drug-sensitive *T. congolense* had comparable serum biochemical effects which were more severe than those induced by multidrug-resistant *T. brucei*.

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