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TISSUE DISTRIBUTION OF A MULTIDRUG RESISTANT STRAIN OF *Trypanosoma cruzi* IN THE FACE OF BENZNIDAZOLE TREATMENT

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Chagas disease is a major medical and social problem that affects approximately 7 million people. The reference drug for the treatment of this parasitosis, benznidazole (Bz), has an unsatisfactory toxicity and efficacy profile, resulting in therapeutic failures of up to 80%, particularly in the chronic phase of the disease. To understand the dynamics of the resistance mechanism, this study evaluated the tissue distribution of a Bz-resistant *T. cruzi* strain and the impact of treatment with this drug on parasitism maintenance and intensity. Four-week-old BALB/c mice were inoculated with blood trypomastigote forms of the Colombian strain. On the 10th day after infection, after confirmation of parasitemia, treatment was initiated orally, with a daily dose of 100 mg/kg of Bz for 5 days (n=6). Infected and untreated mice (n=9) and uninfected mice (n=3) were used as controls. The animals were euthanized 24 hours after the last dose, and several organs and tissues were collected. The samples were subjected to genomic DNA extraction using a commercial kit, and the parasite load was quantified by *qPCR*, expressed as parasite equivalents/25 ng of DNA (*pe*). The results showed a wide strain distribution, with higher parasitism in skeletal muscle and adipose tissue (~200 *pe*), followed by the heart (76 *pe*). Less than 10 *pe* were detected in the spleen, liver, lungs, and kidneys; the brain and small intestine had lower parasitism concentrations (<1 *pe*). Bz significantly reduced infection in all organs, particularly in the heart, where a 2000-fold reduction in the parasite load was observed. No parasite DNA was detected in the lungs of the treated animals. The data suggest that adipose tissue is an important niche for the Colombian strain in the acute phase of infection and point to differential activity of Bz in different tissues under the experimental conditions used.

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