

TITLE: MOLECULAR CHARACTERIZATION OF *TRYPANOSOMA CRUZI* IN AÇAÍ

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ABSTRACT

Several cases of food-borne acute Chagas disease (ACD) have been reported in the Brazilian Amazon so far. Up to 2004, the occurrence of ACD by oral transmission, associated with food consumption, was rare. Recent cases of ACD in Brazil have been attributed to the consumption of açai juice containing reservoir animals or insect vectors waste, infected with *Trypanosoma cruzi*. The aim of this study was to determine the *T. cruzi* contamination rate and genotyping the parasite in food samples prepared from açai, commercialized in Rio de Janeiro and Pará States in Brazil. The amplificability of DNA extracted from açai samples, and *T. cruzi* and Triatomines detection were performed by conventional PCR from açai products commercialized in Rio de Janeiro and Pará States. Molecular characterization was done by *multilocus* PCR analysis, to determine the parasite Discrete Type Units (DTUs) based on the size of PCR products in agarose gels, using the intergenic region of the Spliced Leader (SL), 24 Sα rDNA and nuclear fragment A10 as targets. From the 140 samples of açai-based products analyzed, *T. cruzi* DNA could be detected in fourteen samples (10% positivity rate). From these positive ones, triatomine DNA could also be detected in one sample. The parasite genotyping demonstrated that food samples containing açai showed a mixture of *T. cruzi* DTUs with the prevalence of TcIII, TcV, and TcI. In this study, the molecular detection and identification of *T. cruzi* from açai-based manufactured food samples, commercialized in Pará and Rio de Janeiro states, was performed for the first time. Although parasite DNA is a marker of possible contamination during food manufacturing, our findings do not represent that this is a source of Chagas disease oral transmission per se, since live parasites were not investigated. Nevertheless, this molecular approach could be a powerful tool in the epidemiological investigation of outbreaks, supporting previous evidences that açai-based food can be contaminated with *T. cruzi*. Furthermore, both food quality control and assessment of good manufacturing practices involving açai-based products can be improved, assuring the safety of açai products and maintaining their nutritional and sensorial properties.

Keywords: Chagas disease, *Trypanosoma cruzi*, Açai, Oral Transmission, *T. cruzi* Genotyping, Health Surveillance