Evaluation of the Trypanocidal Activity of Freshwater Microalgae Extracts

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Abstract

Microalgae are a diverse biological group, including organisms such as cyanobacteria and protozoa, and are rich sources of bioactive compounds with potential pharmaceutical applications. Chagas disease, caused by the protozoan *Trypanosoma cruzi*, still lacks effective treatments, especially due to the scarcity of new drugs. This study investigated the potential of ethanolic extracts made from freshwater microalgae against *T. cruzi*, focusing on discovering new therapeutic alternatives.

Microalgae species (TO, AFA, KL, DB, AF, and CM) were cultured in Oligo medium, and the biomass was collected by centrifugation and lyophilized for storage. The ethanolic extracts were obtained by sonicating the biomass in absolute ethanol, followed by centrifugation to collect the supernatant and evaporation of the solvent. The extracts were dissolved in DMSO and evaluated for activity against the epimastigote forms of *T. cruzi* (Y strain) using the MTT cell viability assay.

The results showed that the extract from the TO species was the most effective, with an IC50 of 17.6 µg/mL, followed by AF (IC50 of 56.2 µg/mL) and KL (IC50 of 78.7 µg/mL). Despite a high IC50 (446.61 µg/mL), the DB extract induced up to 92.4% parasite mortality in the test with 550 µg/mL. The AFA and CM extracts also presented high IC50 values (259.6 µg/mL and 356.7 µg/mL, respectively) and lower efficacy at the highest concentrations tested.

These results highlight the potential of microalgae as a source of bioactive compounds for the development of new treatments against Chagas disease, emphasizing the importance of exploring this biodiversity for innovative therapies.

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