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Screening of Metal-Based Azole Derivatives Antiparasitic Activity on Trypanosoma cruzi and Leishmania major

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The trypanosomatids *Leishmania major* and *Trypanosoma cruzi* are parasites that affect millions of people worldwide. Leishmaniasis is naturally transmitted via sandflies while *T. cruzi* is transmitted by kissing bugs. Due to immigration and deployment to endemic regions, lack of screening in blood banks and climatic changes these neglected diseases have become a growing health concern in the United States. The lack of vaccines to prevent/treat the diseases and the toxicity of current treatments supports the need for new drug treatments. Azole compounds inhibit the sterol synthesis pathway of these parasites, which has been validated as a drug target. *T.cruzi* epimastigote forms were analyzed using alamarBlue®. A luciferase assay was used with transgenic promastigotes (Friedlin clone V1) expressing firefly luciferase for *L. major*. The parasites were incubated 72 hr with the drugs. The most potent trypanocidal compounds were AM163 and AM161 showing 86% and 78% mortality at 468 nM; followed by AM160 and AM103 with 91% mortality at 937 nM. For *L. major* the most efficient derivates were AM162 and AM161, with 84% and 80% mortality using 243 nm. To determine the clearance of the parasite in infected cells, *in vitro* infectivity experiments using high content imaging are planned. The goal of the project is to find new treatments for Chagas' disease and leishmaniasis.