

Antileishmanial activity of purified products from *Zingiber Officinalis Roscoe* and their application against tegumentary leishmaniasis

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Leishmaniasis is a major public health problem, and the alarming spread of parasite resistance underlines the importance of discovering new therapeutic products. The present study aims to investigate the *in vitro* antileishmanial activity of *Zingiber Officinalis Roscoe* water extract and its purified fraction (namely F10) against *Leishmania amazonensis* species. The water extract and F10 were prepared and evaluated against stationary-phase promastigotes of *L. amazonensis*. Also, the cytotoxicity and hemolytic activity in type O⁺ human red blood cells were analyzed, as well as the treatment of the infected macrophages with *L. amazonensis*. The products showed to be effective against parasites, presenting IC₅₀ values of 80.0 and 48.0 µg/mL, respectively, to water extract and F10 fraction. The percentage of infection with *L. amazonensis* in murine macrophages after treatment with the extract or F10 was of 50.0% and 12.7%, respectively; while the control cells had 75% of degree of infection. The chemical characterization of F10 fraction showed the presence of tannis, anthraquinones, triterpenoids, coumarins, alkaloids, saponins, and cardiotoxic glycosides. The applied extract and fraction presented a low toxicity in macrophages and a null hemolytic activity. Our studies also showed that fraction F10 induced the production of nitric oxide (NO) after stimulation of murine macrophages, suggesting that this could be the reason for the *in vitro* elimination of parasites. The results demonstrated that the F10 purified from *Zingiber officinalis Roscoe* could potentially be used as a new therapeutic alternative on its own, or in association with other drugs, to treat leishmaniasis caused by *L. amazonensis*.

Keywords: *Zingiber Officinalis Roscoe*; antileishmanial activity; treatment; toxicity; leishmaniasis.

Financial Support: Programa de Pós-Graduação em Ciências da Saúde: Infectologia e Medicina Tropical, Faculdade de Medicina, UFMG. FAPEMIG. CAPES. CNPq.