

TITLE: LEISHMANICIDAL, ANTIBACTERIAL AND ANTITUMOR POTENTIAL OF ANHYDROCOCHLIOQUINONE A OBTAINED FROM THE ENDOPHYTIC FUNGUS.

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ABSTRACT:

Neglected diseases, as leishmaniasis, infectious diseases and cancer constitute an important health problem in the whole world. They are marginalized by health services and government, because they afflict mainly poor and with little or no political voice. Although it is the cause of suffering, incapacities and deformities accompanying the individual for the rest of their lives, these diseases are not usually the major causes of mortality. In this context, the endophytic fungi of the plant *Piptadenia adiantoides* were selected for the isolation of bioactive compounds due to its potential presented in previous works. The bioassay-guided fractionation of the ethyl acetate extract of the fungus *Cochliobolus* sp. highlighted leishmanicidal activity and allowed for anhydrocochlioquinone A (ANDC-A) isolation. MS, 1D and 2D NMR spectra of this compound were in agreement with those published in the literature. ANDC-A exhibited leishmanicidal activity with EC₅₀ value of 22.4 µg/mL (44 µM) and, when submitted to the microdilution assay against Gram-positive and Gram-negative bacteria, showed a MIC value of 128 µg/mL (243 µM) against *Staphylococcus aureus* ATCC 25295. It was also active against five human cancer cell lines, showing IC₅₀ values from 5.4 to 20.3 µM. ANDC-A demonstrated a differential selectivity for HL-60 (SI 5.5) and THP-1 (SI 4.3) cell lines in comparison with Vero cells and was more selective than cisplatin and doxorubicin against MCF-7 cell line in comparison with human peripheral blood mononuclear cells (PBMC). ANDC-A was able to eradicate clonogenic tumor cells at concentrations of 20 and 50 µM and induced apoptosis in all tumor cell lines at 20 µM. These results suggest that ANDC-A might be used as a biochemical tool in the study of tumor cells biochemistry as well as an anticancer agent with durable effects on tumors.

Keywords: Anhydrocochlioquinone a; *Cochliobolus* sp.; Leishmanicidal; Antimicrobial; Tumor cells.

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