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DEREPLICATION OF ESSENTIAL OILS FROM Nectandra paranaensis (LAURACEAE) WITH ANTI-Trypanosoma cruzi ACTIVITY

Daniela da C. Tristão[1], Marina de M. Gonçalves[1], Giovanna T. Santos[1], Sarah L. Reis[1], Vanessa Albuquerque[2], Roberto B. Almeida[3], André G. Tempone[2], João Henrique G. Lago[1]

marina.monroe@ufabc.edu.br

[1]*Centro de Ciências Naturais e Humanas, Universidade Federal do ABC, Santo André, SP, Brazil;*
[2]*Laboratório de Fisiopatologia, Instituto Butantan, São Paulo, SP, Brazil.*
[3]*Instituto de Biociências, Universidade de São Paulo, SP, Brazil.*

Neglected tropical diseases affect approximately one billion people worldwide. One such disease is Chagas disease, which is caused by *Trypanosoma cruzi* and has only two available treatments: benznidazole and nifurtimox. In this context, natural products are essential for identifying new bioactive compounds. This study reports the anti-*T. cruzi* evaluation and chemical dereplication of essential oils (EOs) from *Nectandra paranaensis* (Lauraceae), a previously uninvestigated species. Initially, leaves and twigs were extracted separately using a Clevenger-type apparatus to obtain their EOs. Dereplication using gas chromatography-mass spectrometry (GC-MS) analysis revealed 37 compounds in the leaves (90.5% of the total composition) and 34 compounds in the twigs (90.0% of the total). The composition of both is aligned with the genus description, with the majority of the compounds being oxygenated sesquiterpenes (46.5% in the leaves and 65.5% in the twigs), followed by hydrocarbon sesquiterpenes (42.2% in the leaves and 24.5% in the twigs). Guaiol was the main component detected in the leaf (11.1%) and in the twig (26.7%) oils. Other abundant compounds in the leaves were α-eudesmol (10.4%), δ-cadinene (9.4%), *E*-caryophyllene (5.7%), and spathulenol (4.3%), while the twigs were mainly composed of β-eudesmol (12.1%), *E*-caryophyllene (5.7%), bulnesol (5.0%), and spathulenol (4.3%). Additionally, hexane extracts were prepared from the leaves and twigs of *N. paranaensis* and showed a similar profile by NMR and TLC analysis. Therefore, the hexane extract from the twigs underwent chromatographic fractionation, yielding pure spathulenol (**1**), guaiol (**2**), β-eudesmol (**3**), and ylangenol (**4**). The EC_{50} values of compounds **2**, **3**, and **4** against trypomastigotes of *T. cruzi* were determined to be 7.6, 21.5, and 11.6 µM, respectively. These compounds exhibited reduced toxicity against NCTC cells (CC_{50} > 200 µM). Compared to the control benznidazole (EC_{50} = 18.7 µM and CC_{50} > 200 µM), compounds **2** and **4** exhibited potent activity. Similarly, 100% of parasite death occurred at 200 µg/mL of both EOs, with no toxicity against NCTC cells (CC_{50} > 200 µg/mL), which suggests that the effect is due, at least in part, to the predominance of guaiol (**2**) in both oils.

Keywords: *Chagas disease, volatile oils, sesquiterpenes, guaiol*