

Poster

Cruzain inhibitory activity of leaf essential oils from Neotropical Lauraceae

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Introduction. Over 18 million people in tropical and subtropical America are afflicted by American trypanosomiasis or Chagas disease. Cruzain is a cysteine protease from *Trypanosoma cruzi* that is key to replication and differentiation of the parasite and has been identified as an important biochemical target for treatment of this parasitic infection [1].

Objectives. To screen the leaf essential oils of members of the Lauraceae from Monteverde, Costa Rica, for inhibition of cruzain; to analyze the chemical composition of the leaf oils; and to determine if any of the major components are responsible for inhibitory activity.

Methods. The leaf essential oils of five species of *Beilschmiedia*, three species of *Cinnamomum*, a *Nectandra*, ten species of *Ocotea*, three species of *Persea*, and a *Pleurothyrium*, from Monteverde, Costa Rica, were obtained by hydrodistillation and analyzed by GC-MS. The enzyme inhibitory activities of the essential oils against cruzain have been examined using a fluorometric assay [2].

Results. *O. meiziana* leaf oil was the most active (IC-50 = 14.9 ug/mL) followed by *O. whitei* (15.8 ug/mL), *Ocotea* sp. nov. "los llanos" (17.1 ug/mL), *Ocotea* sp. nov. "small leaf" (19.2 ug/mL), *B. tilaranensis* (23.6 ug/mL), *Persea* sp. nov. "small leaf" (50.6 ug/mL), *B. brenesii* (61.9 ug/mL), *P. caerulea* (62.5 ug/mL), and *O. holdridgeana* (76.9 ug/mL). The Lauraceae leaf essential oils are generally dominated by the monoterpenes alpha- and beta-pinene and the sesquiterpenes beta-caryophyllene and germacrene D [3]. alpha-Pinene and beta-pinene show slight cruzain inhibitory activity (IC-50 = 160 and 155 ug/mL, respectively), but neither beta-caryophyllene nor germacrene D are active (IC-50 > 500 ug/mL).

Conclusion. The cruzain inhibitory activity of leaf essential oils of Neotropical Lauraceae cannot be explained by the activities of the major components alone. There may be synergistic effects of the components or the activities may be due to minor components.

Keywords: Chagas disease, Trypanosomiasis, *Beilschmiedia*, *Ocotea*, *Persea*

Selected References

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