

Evaluation of trypanocidal activity from *Calea uniflora* (Heliantheae-Asteraceae) extracts

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Abstract

Dichloromethane crude extract from xylopodium of *Calea uniflora* Less (Heliantheae-Asteraceae) showed *in vitro* trypanocidal activity against trypomastigote forms of *Trypanosoma cruzi*. The data obtained allow to conclude that the crude extract must be investigated to identify its active compounds.

American trypanosomiasis (Chagas' disease) is a severe disease that occurs in Latin America. It is caused by flagellate protozoan *Trypanosoma cruzi*, transmitted by triatomine insects and by blood transfusion. To develop strategies for keeping the vector insect population and to prevent infection by blood transfusion are two ways for controlling the disease¹. Gentian violet is the only chemoprophylactic agent employed for this purpose. Although it may cause undesirable effects in the patients². New chemicals for use in banked blood or drugs for treatment of acute and chronic infections are urgently required³. Plant extracts may be potential sources of such compounds. *Calea uniflora* Less is a plant belonging to the tribe Heliantheae, family Asteraceae. The genus contains about 110 species and are found in Mexico, Central and South America⁴. It is important to note that some species of the genus *Calea* are used for stomach disease^{5,6,7,8}. Cerain et al.⁹ observed cytotoxic activity of *Calea glomerata* extract. In this work we report the results of the evaluation of the *in vitro* trypanocidal activity of *Calea uniflora* extracts. The trypanocidal bioassay are shown in Table 1 and by the results we believe that the dichloromethane extract of xylopodium have compounds with

Table 1. *In vitro* trypanocidal activity of crude extracts from *Calea uniflora*

Crude extracts	% lysis ± (SD)
Aerial parts in CH ₂ Cl ₂	41.73 ± 2.73
Aerial parts in ethanol	19.67 ± 14.75
Xylopodium in CH ₂ Cl ₂	98.81 ± 1.18
Xylopodium in ethanol	37.00 ± 19.67

high trypanocidal activity.

Material and Methods

Plant material: *Calea uniflora* Less. was collected at the Washington Luis highway, 1 km far from Posto Castelo, on March, 1997. Plant identification was performed by Dr. Jose L. Panero from Department of Botany, University of Texas, USA, and a voucher specimen (SPFR 04003) is deposited in the herbarium of Department of Biology, FFCLRP/USP.

Extraction procedures: Dried and powdered aerial parts (63 g) were exhaustively extracted with CH₂Cl₂ and ethanol at room temperature affording 0.127 and 3.38 g of crude extracts respectively. Dried and powdered xylopodium (200 g) also were extracted with CH₂Cl₂ and ethanol 4.24 and 9.65 g of crude extracts respectively.

Bioassay with trypomastigotes: All the extracts were submitted to *in vitro* biological assay against trypomastigotes blood forms of *T. cruzi*. The bioassays were carried out using blood collected by cardiac puncture of Swiss albino mice in the parasitemy peak (seventh day) after infection with the Y strain of *T. cruzi*. The blood was diluted with not infected murine blood to give a concentration of ca. 2 x 10⁶ trypomastigote forms/ml. Stock solutions of the extracts to be tested were prepared by dissolution in DMSO (dimethyl sulfoxide) to a final concentration of 25 mg/ml. The bioassays were performed in triplicate on microtitre plates (96 wells) which contained 200 µl of mixture/well. To each sample, aliquots of the stock solutions were added to the diluted blood in such quantities as to give final concentrations of 4.0 mg/ml sample per mL of mixture in the wells. The plates were incubated at 4 °C during 24 h and the number of parasites determined according to Brener¹⁰. Controls were blood of infected mice without any addition, infected blood containing DMSO in equivalent amounts as the samples, and infected blood containing gentian violet (positive control) at a concentrations of 250 mg/ml.

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Evaluation of the central activity of the ethanolic extract of *Acosmium subelegans* (Mohlenbr) in mice

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Abstract

The ethanolic extract (EE) of *Acosmium subelegans* (Mohlenbr) Yakovl (perobinha-do-campo) was tested to behavioral paradigms in mice to investigate its putative central depressant effect. Oral pretreatment with the EE significantly reduced in a dose-dependent way the locomotor activity and increased by 30-55% the barbiturate sleep duration relatively to control values. At the highest dose (1,0 g.kg⁻¹) it decreased the extension time/flexion time ratio of the maximal electroshock-induced convulsions, enhanced the latency to the pentylenetetrazol-induced convulsions and diminished by 26% the number of seizures, indicating an anticonvulsant action. No changes were observed in the motor coordination, the core temperature, climbing behavior, catalepsy and the plus-maze performance. The preliminary results indicate that the EE of *A. subelegans* induce a CNS depressant effect, more specifically an anticonvulsant effect that deserve a thorough investigation.

Acosmium subelegans (Mohlenbr) Yakovl, Leguminaceae, popularly known as "perobinha-do-campo", is used in the Brazilian folk medicine as sedative or "tranquilizer", in epilepsy treatment, in hysteria, nervous breakdown and chorea¹. Previous pharmacological studies described that the benzenic extracts obtained from the related species *Acosmium dasycarpum* (Vog) Yakovl produced a depressant effect upon the central nervous system (CNS) of rats and mice, revealed by a potentiation of barbiturate-sleep, a reduction of the spontaneous and the amphetamine-induced locomotor activity. No protection against pentylenetetrazol and stricnine-induced convulsions was seen². The extract main active constituent was identified as lupeol, a triterpene compound. Lupeol, also reduced the ambulation of mice and potentiated the barbiturate-hypnosis without affecting the animals motor coordination³. Comparatively, the ethanolic extract of *A. subelegans* presented a similar profile of action, decreasing the locomotion in rats⁴ and potentiating the barbiturate-induced sleep in mice⁵. The present