

Cocaine-Like Actions of *Erythroxylum argentinum* Schulz (*Erythroxylaceae*)

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SUMMARY. The crude alkaloid fraction (200 mg/kg, i.p.) from the leaves of *Erythroxylum argentinum* Schulz (*Erythroxylaceae*) was able to reverse the reserpine induced ptosis in mice and showed a local anesthetic effect (1%) in the twitch response in the guinea-pig skin test. The acute toxicity of the crude alcoholic extract was not excessive up to 1250 mg/kg in mice.

RESUMEN. "Acciones Símil-cocaína producidas por *Erythroxylum argentinum* Schulz (*Erythroxylaceae*)". El extracto alcaloidal crudo (200 mg/kg, i.p.) de hojas de *Erythroxylum argentinum* Schulz (*Erythroxylaceae*) demostró capacidad de reversión de la ptosis inducida por reserpina en ratones y una actividad anestésica (1%) por el método de la anestesia comparada con conejillos de las Indias. El efecto tóxico de extractos etanólicos crudos no fue significativo (1250 mg/kg) en ratones.

INTRODUCTION

The genus *Erythroxylum* is the exclusive natural source of cocaine, being represented in the state of Rio Grande do Sul (Brazil) by nine species. Several species have been used as purgative, astringent and central stimulant¹. *Erythroxylum argentinum* Schulz (*Erythroxylaceae*) is a shrub or a small tree widespread in Argentina and the south of Brazil used in folk medicine as a stomachic and as a treatment for sinusitis or flu¹. From the leaves of this species tropane alkaloids as tropacocaine, hygrine, cuscohygrine², methylecgonidine, 4-hydroxyhygrinic acid and 3-benzoyloxynortropane³ were isolated. Analgesic and anti-inflammatory effects of the crude extracts were reported using animal models⁴. Novák *et al.*⁵ demonstrated *in vitro* a cocaine-like activity of tropacocaine, the main alkaloid isolated from this species^{2,3}. Therefore, the aim of this study was to investigate a possible pharmacological cocaine-like profile for *Erythroxylum argentinum*, as well as to assess its acute toxicity.

MATERIAL AND METHODS

Plant Material

The leaves of *Erythroxylum argentinum* were collected in Porto Alegre, Brazil, and identified by M. Sobral; a voucher specimen has been deposited at the Herbarium of the Departamento de Botânica do Instituto de Biociências - UFRGS, Porto Alegre, Brazil (ICN 87535).

Preparation of the crude alcoholic extract

Dry and powdered leaves (1000 g) were exhaustively extracted with 70° ethanol in a Soxhlet apparatus and the extracts were evaporated under reduced pressure at temperature lower than 60 °C (100 g of dry leaves affords 17,8 g of crude extract).

Preparation of the crude alkaloidal fraction

The ground, air-dried, leaves (200 g) were soaked with 25% aqueous NH₄OH and then exhaustively extracted with CH₂Cl₂ in a Soxhlet apparatus. This concentrated extract was parti-

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PALABRAS CLAVE: *Erythroxylum argentinum*, Alcaloides tropánicos, Efecto anestésico, Acción símil-cocaína.

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