



**ANAIIS DO  
SIMPÓSIO  
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DE ÓLEOS ESSENCIAIS**

## ***In vitro* activity of *Erigeron bonariensis* L. essential oil and its main polyacetylenic compound as neutralizers of bothropic venoms**

**Manuel Minteguiaga<sup>1</sup>; Ana María Torres<sup>2</sup>; Noelia Umpiérrez<sup>1</sup>; César A.N. Catalán<sup>3</sup>; Eduardo Dellacassa<sup>1</sup>. [manuel.minteguiaga@pedeciba.edu.uy](mailto:manuel.minteguiaga@pedeciba.edu.uy)**

<sup>1</sup>Universidad de la República, Tacuarembó/Montevideo, Uruguay; <sup>2</sup>Universidad Nacional del Nordeste, Corrientes, Argentina; <sup>3</sup>Universidad Nacional de Tucumán, San Miguel de Tucumán, Argentina.

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**INTRODUCTION:** *Erigeron bonariensis* L. is an aromatic and medicinal plant native of South America but currently distributed worldwide given its weed character. The chemical composition of its essential oil (EBEO) has been deeply investigated, highlighting the presence of mono- and sesquiterpenes, and polyacetylenes (PAs). In particular, *cis*-lachnophyllum acid methyl ester (LAME) has been reported to be one of the major components of EBEOs, where it accounts for more than 20% of the oil. The *in vitro* role of EBEO and other extracts as inhibitors of the effects of snake venom (including bothropic venoms) has been reported, but isolated components have not been evaluated so far. **OBJECTIVE:** Perform a systematic evaluation of the *in vitro* activity of EBEO and LAME against *Bothrops diporus* venom. **METHODOLOGY:** *E. bonariensis* plant material was collected at the full-flowering stage from a wild population in Canelones, Uruguay. EBEO was obtained by hydro-distillation using a Clevenger apparatus, while its composition was studied by GC-MS applying previously published protocols. LAME was isolated from EBEO by column chromatography, and its identity was corroborated by NMR. Both EBEO and LAME were incubated with *B. diporus* venom and submitted to the following *in vitro* alexiteric tests: inhibition of proteolysis (with casein as a model), indirect inhibition of hemolysis (using agarose-erythrocyte-egg yolk medium), inhibition of coagulation of normal plasma (assessed by a coagulometer COL1 Wiener) and alteration of the venom proteins bands (followed by SDS-PAGE). **RESULTS, DISCUSSION AND CONCLUSIONS:** Assessed by GC-MS, EBEO showed as main components LAME (32.8%), limonene (23.5%), germacrene D (8.2%), *trans*- $\beta$ -ocimene (6.9%) and  $\beta$ -pinene (5.0%). LAME was isolated in 94% purity according to GC-MS. EBEO and LAME altered *B. diporus* venom protein bands and exerted inhibition of proteolysis in SDS-PAGE. Moreover, both inhibit indirect hemolysis (26.3% and 57.9% respectively), whereas only LAME inhibits coagulation (60.6%). A preliminary SDS-PAGE study using *B. alternatus* venom also suggested *in vitro* neutralizing activity. The obtained results confirm the potential of EBEO as a neutralizer of bothropic venom, highlighting the role of LAME and PAs.

**Keywords:** *Bothrops alternatus*, *Bothrops diporus*, Essential oil, *Erigeron bonariensis*.

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