



In vitro anti-parasitic effects of sesquiterpene lactones from chicory against cattle nematodes

Pena-Espinoza, Miguel Angel; Williams, A.; Boas, Ulrik; Thamsborg, S.; Enemark, Heidi

Publication date:
2014

Document Version
Peer reviewed version

[Link back to DTU Orbit](#)

Citation (APA):

Pena-Espinoza, M. A., Williams, A., Boas, U., Thamsborg, S., & Enemark, H. (2014). *In vitro anti-parasitic effects of sesquiterpene lactones from chicory against cattle nematodes*. Abstract from 65th Annual meeting of the European Federation of Animal Science, Copenhagen, Denmark.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

***In vitro* anti-parasitic effects of sesquiterpene lactones from chicory against cattle nematodes**

M. Peña¹, A. Williams², U. Boas¹, S. Thamsborg², H. Enemark¹

¹Technical University of Denmark, National Veterinary Institute, Bülowsvej 27, 1870 Frederiksberg C, DK; ²University of Copenhagen, Department of Veterinary Disease Biology, Dyrlægevej 100, 1870 Frederiksberg C, DK; miap@vet.dtu.dk

Chicory (*Cichorium intybus*) is currently being investigated for potential use as an anti-parasitic crop for ruminants. However, mechanisms behind observed *in vivo* effects are poorly understood but it is likely that plant secondary metabolites like sesquiterpene lactones (SL) play a role. In this study we tested the effect of SL-rich extracts from 2 chicory cultivars on the viability of first-stage larvae (L1) of *Ostertagia ostertagi*, a pathogenic cattle nematode. Chicory *Spadona* and *Puna II* were grown at the same farm and leaves were sampled the same day. 1 g of freeze-dried leaves was extracted in methanol/water. Resulting extracts were incubated with cellulase enzymes, recovered in ethyl acetate and purified by normal solid-phase extraction. Obtained extracts were dissolved in 100% DMSO. A calf infected with *O. ostertagi* served as donor of nematode eggs. Eggs were hatched and L1 obtained were incubated in 8 extract concentrations for each cultivar (in duplicates) ranging from 2000 µg to 16 µg dry matter (DM) extract/mL (final concentration 1% DMSO in PBS). Ivermectin (1 mg/mL) and 1% DMSO in PBS were used as positive and negative controls, resp. Viability of L1 was evaluated morphologically after 12 h of incubation (25°C) and was expressed as the number of live L1 to the total number of L1. *Spadona*-SL dramatically decreased the survival of *O. ostertagi* L1, with a mortality of 99% at concentrations ≥ 500 µg/mL and EC₅₀ of 132.8 µg/mL (CI = 117.5-150.2 µg/mL). Conversely, *Puna*-SL induced a larval mortality of only 37% at the highest concentration tested (2000 µg/mL), thus estimation of EC₅₀ was not possible. Results showed a marked difference in the anti-parasitic activity of SL-rich extracts from 2 different chicory cultivars. Further biochemical analyses of the extracts may reveal the responsible compounds.