



43<sup>rd</sup>  
ISEO

# International Symposium on Essential Oils

5 to 8 September 2012  
Lisbon - Portugal



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## **Program, Book of Abstracts and Participants List**

**Organized by**

Prof. Dr Ana Cristina Figueiredo  
Prof. Dr José Gonçalves Barroso  
Prof. Dr Luis Gaspar Pedro



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## **Editors**

Ana Cristina Figueiredo  
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The content of the Abstracts is the authors responsibility

**P 90. Antimicrobial activity of essential oils against *Paenibacillus larvae***

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Keywords: essential oils; antimicrobial activity; *Paenibacillus larvae*

American foulbrood is a serious bacterial disease that affects *Apis mellifera* colonies; the causative agent is *Paenibacillus larvae* [1]. The aim of the study was to evaluate *in vitro* the antimicrobial activity of 32 essential oils against *P. larvae*. Oils from 21 botanical species were analyzed by gas chromatography (CG and CG/EM). All essential oils were classified according to the composition of their main components in two groups: benzene ring compounds (BRC) and terpene compounds (TC). Minimal inhibitory concentration (MIC) in MYT broth [2] was assessed by the microdilution method. Final serial dilution concentrations of the essential oils ranged between 2,000-12.5 mg/L. The bacterial isolates were collected from different Argentina's region. The chromatographic analysis showed that a 67% of the essential oils contained predominately terpene compounds, while the remaining 33% included mainly compounds with benzene rings. From the TC group, *Cymbopogon citratus* essential oil showed the better antimicrobial activity against *P. larvae* with MIC values between 150 and 250 mg/L. The essential oils from *Aloysia polystachya* and *Mentha spp.* had the lowest inhibitory activity. Among the oils from the BRC group, one of the lowest MIC values was found with cinnamon essential oil (*Cinnamomun zeylanicum*) being between 25 and 50 mg/L; *Origanum vulgare* showed the highest MIC values (350-400 mg/L). Essential oils, especially those with BRC in their composition, presented inhibitory capacity against *P. larvae* strains.

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1. E Genersch (2010) J Invertebr Pathol. 103: 10–19.

2. LB Gende, MJ Eguaras, R Fritz (2008) Rev Argent Microbiol. 40:147-150.