

PP106. Anti-*Bacillus cereus* activity of three aromatic plants cultivated in the Region of Murcia (Spain)

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Bacillus cereus is a Gram-positive, endospore-forming, opportunistic human pathogen that causes two types of food-poisoning syndrome: emesis and diarrhea. The trend towards Refrigerated Processed Foods of Extended Durability (REFPEDs) and the increasing percentage of elderly and immunocompromised people will raise the importance of *B. cereus* as an aetiological agent of food-borne illness. The aim of this work was to evaluate the chemical variability of the essential oils of three Lamiaceae taxa: *Origanum vulgare* L., *Salvia officinalis* subsp. *lavandulifolia* (Vahl) Gams (syn. *Salvia lavandulifolia* Vahl), and *Thymus hyemalis* Lange in relation to their antibacterial activity against *B. cereus* strain CECT 131. A total of 30 individual plants (10 from each species) were used in the assay. The essential oils were extracted by hydrodistillation and the qualitative and quantitative compositions were analyzed using a gas chromatograph coupled to a mass spectrometric detector (GC-MS). The minimal inhibitory concentrations (MIC) were determined by a microdilution technique, using 96-well microplates. The minimal bactericidal concentrations (MBC) were established by pour-plating. To determine if the vegetative form or the endospore was the cause of the bacterial growth, Würtz staining was used: malachite green binds to the endospores and is used as a contrast dye, while safranin stains the vegetative cells. The tested concentrations of the essential oils ranged from 40 to 10000 ppm for *O. vulgare* and *T. hyemalis*, and from 1875 to 60000 ppm for *S. lavandulifolia*. The herein tested essential-oil chemotypes of *O. vulgare* were: (A) 86% of carvacrol, (B) 77% of carvacrol and 6% of thymol, and (C) 65% of carvacrol and 18% of thymol; the chemotypes of *S. lavandulifolia* were: (D) 37% of camphor, 11% of α -pinene and 8% of eucalyptol, (E) 22% of camphor and 25% of eucalyptol, and (F) 55% of eucalyptol and 13% of camphor; and for *T. hyemalis*, the chemotypes were: (G) 52% of carvacrol and 25% *p*-cymene, (H) 50% of thymol, 25% of *p*-cymene and 10% of γ -terpinene, and (I) 44% of *p*-cymene and 41% of thymol. From the results it can be concluded: that the highest antimicrobial power was exhibited by chemotypes A of *O. vulgare* and G of *T. hyemalis* (MIC = 156-312 ppm), for the exposure times of 24 and 48 h. In the case of *S. lavandulifolia*, the lowest MIC was that of chemotype D in the concentration range 5000-60000 ppm. The MBC for the endospores, for all the chemotypes tested, was higher than the concentrations evaluated.

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