

113: Bioactivity and phenolic characterization of different medicinal and aromatic plants - Gomes F

Gomes F¹, Dias M.P², Lima Â¹, Barros L², Ferreira I.C.F.R² and Henriques M¹

¹CEB, Centre of Biological Engineering, LIBRO–Laboratório de Investigação em Biofilmes Rosário Oliveira, University of Minho, 4710-057 Braga, Portugal, ²Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

Introduction: Plants are widely used to treat various diseases and have been widely recognized as a rich source of phytochemicals with antimicrobial potential. In fact, plants have received considerable attention by researchers being their biological properties widely explored.

Hypothesis and aims: Medicinal and aromatic plants are known to have a wide range of uses and health benefits, and should be exploited concerning their bioactivity. Therefore, the antimicrobial activity of *Satureja montana* L., *Origanum majorana* L., *Allium schoenoprasum* L. and *Anethum graveolens* L. were evaluated and its phytochemical composition was profiled.

Methodology: The antimicrobial susceptibility of Gram-positive and Gram-negative bacteria to four decoction and hydroethanolic (80:20, v/v) extracts, obtained from medicinal and aromatic plants (*S. montana*, *O. majorana*, *A. schoenoprasum* and *A. graveolens*), was assessed aiming to identify the active extracts and the most effective were then tested against biofilms. Furthermore, the decoctions were characterized in terms of phenolic compounds by HPLC-DAD-ESI/MSn.

Results: Overall, *S. montana* and *O. majorana* extracts were the most effective against Gram-positive (*Staphylococcus aureus*, *Enterococcus faecalis* and *Streptococcus dysgalactiae*) and Gram-negative (*Klebsiella pneumonia* and *Pseudomonas aeruginosa*) bacteria, with decoction presenting the most pronounced effects. *O. majorana* and *S. montana* decoction, at minimum inhibitory concentrations, were significantly effective against planktonic cells of *S. aureus* ATCC 25923. Concerning biofilm cells, *S. montana* promoted a slight antimicrobial activity against *S. aureus* ATCC 25923. A total of twenty-four phenolic compounds (9 phenolic acids and 15 flavonoids glycosides) were identified in *S. montana* and *O. majorana* decoctions, being rosmarinic acid the main molecule in the extracts.

Conclusion: This study confirmed the bioactive potential of the medicinal and aromatic herbs, being *S. montana* and *O. majorana* decoction extracts those that showed the most promising applicability for the development of novel formulations with antimicrobial properties.