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BOOK OF ABSTRACTS



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Exploring the Antimicrobial Potential of *Castanea sativa* Mill. Flowers and *Eucalyptus globulus* L. Leaves against Grape Pathogens

Ítala M.G Marx^{1,2}; Elizandra Ardohain^{1,2}; Paula Rodrigues^{1,2}; Andreia Afonso³; Izamara Oliveira^{1,2}; Tânia Pires^{1,2}; Márcio Carochó^{1,2}; Lillian Barros^{1,2}; Sandrina A. Heleno^{1,2*}

¹Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, 5300-253, Portugal;

²Laboratório Associado para a Sustentabilidade e Tecnologia em Regiões de Montanha (SusTEC), Instituto Politécnico de Bragança, 5300-253, Bragança, Portugal;

³Deifil, Povoia de Lanhoso, Portugal.

*sheleno@ipb.pt

The bioactive potential of chestnut (*Castanea sativa* Mill.) flowers and eucalyptus (*Eucalyptus globulus* L.) leaves, which are residual resources of the industry processing in northern and central Portugal, has been recognized [1,2]. Thus, the use of these by-products as sources of bioactive compounds would not only add value to plant materials but also contribute to environmental sustainability [1,3]. In this sense, the present study aimed to investigate the bioactive potential of chestnut flowers and eucalyptus leaves for the extraction of phenolic compounds with antimicrobial properties. The phenolic composition of cv. Longal *C. sativa* male flowers and *E. globulus* leaves was extracted and characterized using HPLC-DAD/ESI-MS. The antimicrobial potential of these extracts against food contaminants, including grape pathogens such as *Botrytis cinerea*, was evaluated using the microdilution method. Trigalloyl-HHDP-glucoside and digalloylglucose were identified as the major hydrolysable tannins in chestnut flowers and eucalyptus leaves, respectively. The phenolic distribution in plants extracts was 75% of hydrolysable tannins, and 25% of flavonoids for chestnut flowers, while for eucalyptus leaves, the phenolic profile was 74% of hydrolysable tannins, 15% of flavonoids, and in lower concentration, phenolic acids, corresponding to 11%. The extracts exhibited significant antimicrobial activity against the tested microorganisms and inhibited the growth of *B. cinerea* at a concentration of 10 mg/mL. Therefore, these by-products could serve as potential sources of antimicrobial compounds for use in the wine industry, providing a natural alternative to artificial antimicrobials and protecting grapes from *B. cinerea* infections. Finally, the use these extracts would not only add value to plant by-products but also contribute to environmental sustainability by reducing waste from the agro-industries.

Keywords: *Castanea sativa* Mill.; *Eucalyptus globulus* L.; *Plant extracts*; *Phenolic compounds*; *Botrytis cinerea*; *Circular economy*

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