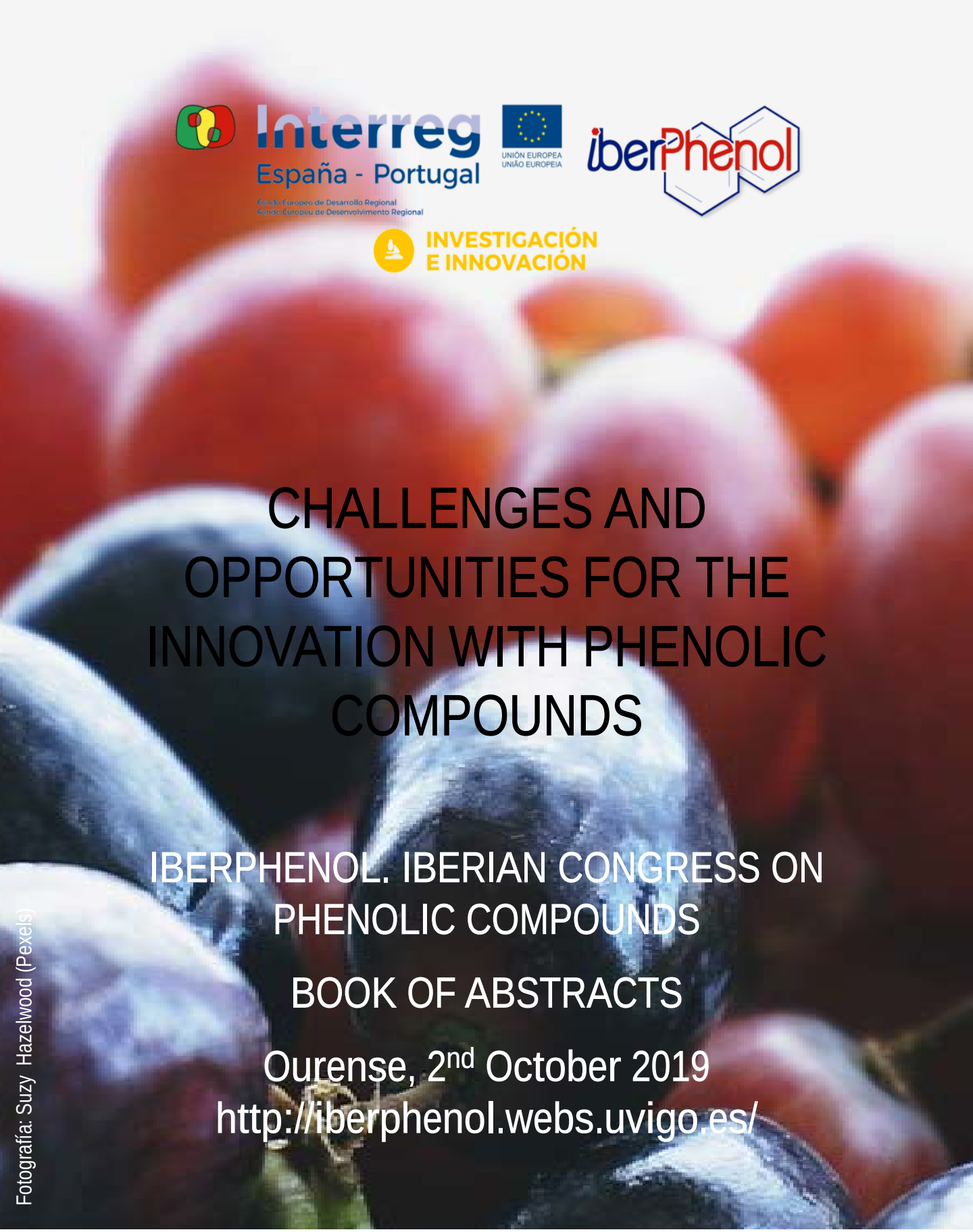

CHALLENGES AND OPPORTUNITIES FOR THE INNOVATION WITH PHENOLIC COMPOUNDS

IBERPHENOL. IBERIAN CONGRESS ON PHENOLIC COMPOUNDS

BOOK OF ABSTRACTS

Ourense, 2nd October 2019

http://iberphenol.webs.uvigo.es/

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Topic 5. Phenolic compounds and health

Chair: Paula Andrade

Proposed section: Phenolic compounds and bioactive properties
Proposed format: oral

Impact of *in vitro* gastrointestinal digestion and colonic fermentation on the phenolic composition and bioactivities of *Rosmarinus officinalis* L.

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Rosmarinus officinalis L. (Lamiaceae) is a plant native to the Mediterranean, popularly known as rosemary. In addition to its culinary use, it has also been used for therapeutic purposes since antiquity [1]. The European Union has considered rosemary extract as a safe and efficient food preservative, being rosmarinic acid (RA) its main constituent [2]. Extracts rich in RA not only have anti-inflammatory, antioxidant and hepatoprotective effects [1], but also prevent oxidation in foods without compromising their sensory acceptance. However, information on the stability of bioactive compounds in rosemary extract is scarce. The aim of this work was to investigate the potential phytochemical losses occurring throughout the sequential steps of *in vitro* gastrointestinal digestion and colonic fermentation of a rosemary aqueous extract. For this purpose, the crude (CE), digested (DE) and fermented (FE) extracts were characterized in terms of their phenolic profile and biological activities. Rosmarinic acid was the phytochemical that underwent the most significate transformation during digestion and fermentation, which amounted to 60% compared to the 26% degradation of the total phenolic compounds. Overall, the simulated digestion step decreased the antioxidant activity estimated by DPPH, ABTS, FRAP, ORAC and TBARS assays. Both CE and DE did not present anti-proliferative potential, however, FE exhibited a pronounced cytotoxic activity (GI_{50} = 116 µg/mL) against HeLa cervical carcinoma cell line. CE and DE showed to be moderate inhibitors of methicillin resistant *Staphylococcus aureus* (MRSA), methicillin-susceptible *S. aureus* (MSSA), and *Listeria monocytogenes*, whilst the FE acted as a moderate inhibitor of MRSA and MSSA. In view of the relevant biological activities confirmed in this study, it is possible to suggest the application of the rosemary aqueous extract as a food additive, either as a preservative and/or as a functional ingredient. However, the use of RA-rich formulations in food industry should consider the stability and bioavailability of this bioactive compound.

Keywords: Antioxidant activity; Anti-proliferative potential; Bactericidal effect; Rosmarinic acid.

References:
[1] G. A Gonçalves, A. B. de Sá-Nakanishi, J. F. Comar, et al., (2018). Food Funct, 1465-1474.
[2] European Food Safety Authority (EFSA), EFSA Journal, 2008, 1-29.