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DEVELOPMENT OF A HERBAL FORMULATION CONTAINING EXTRACTS OF CAMELLIA SINENSIS AND LIMONIUM ALGARVENSE AND ASSESSMENT OF ITS IN VITRO BIOACTIVITIES

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The growing interest of stakeholders and consumers in herbal products urges the need for research aiming to unravel innovative products with health improvement potential. Green tea (*Camellia sinensis* (L.) Kuntze, CS) is commonly sold in mixtures combining different herbs, fruits or spices in order to improve or add beneficial properties to such beverages. Having this in mind, and following previous promising results obtained with the halophyte sea lavender (*Limonium algarvense* Erben. LA) this work prepared and evaluated herbal beverages containing mixtures of CS and LA flowers in terms of antioxidant capacity and inhibition of enzymes related with Alzheimer's (acetyl- and butyrylcholinesterase) and Type 2 diabetes *mellitus* (α-amylase and α-glucosidase). The phenolic profile was determined by HPLC. Both synergistic and antagonistic interactions were observed. LA and CS samples had strong antioxidant activity, whereas LA and CS mixtures exhibited higher OH radical-scavenging and anti-lipid peroxidation capacity. LA samples had higher cholinesterase inhibition than CS and mixtures resulted in stronger enzymatic inhibition. CS had the highest α-glucosidase inhibition, which decreased when combined with LA. CS had higher phenolic contents, and its combination with LA increased the phenolic diversity of the mixtures. Results showed that LA and CS infusions and decoctions and their combinations have relevant *in vitro* antioxidant, neuroprotective and antidiabetic properties. Infusions and decoctions of LA and CS mixtures should thus be further explored as potential innovative functional beverages able to prevent oxidative stress and lipid oxidation related diseases, and to reduce the progression of neurodegenerative diseases and diabetic complications.

Figure 1: Limonium algarvense flowers.

Recent Publications

1. Rodrigues M J, Custódio L, Lopes A, Oliveira M, Neng N R, et al. (2017) Unlocking the *in vitro* anti-inflamatory and antidiabetic potential of *Polygonum maritimum*. Pharmaceutical Biology 55:1348–1357.
2. Rodrigues M J, Katkam G N, Zengin G, Mollica A, Varela J, et al. (2017) Juncaceae species as sources of innovative bioactive compounds for the food industry: *In vitro* antioxidant activity, neuroprotective properties and in silico studies. Food and Chemical Toxicology 107:590–596.

3. Rodrigues M J, Neves V, Martins A, Rauter A P, Neng N R, et al. (2016) *In vitro* antioxidant and anti-inflammatory properties of Limonium algarvense flowers' infusions and decoctions: a comparison with green tea (Camellia sinensis). Food Chemistry 200:322–329.
4. Rodrigues M J, Soszynski A, Martins A, Rauter A P, Neng N R, et al. (2015) Unravelling the antioxidant potential and the phenolic composition of different anatomical organs of the marine halophyte Limonium algarvense. Industrial Crops and Products 77:315–322.
5. Rodrigues M J, Gangadhar K N, Vizetto-Duarte C, Wubshet S G, Nyberg N T, et al. (2014) Maritime halophyte Species from Southern Portugal as sources of bioactive molecules. Marine Drugs 12:2228–2244

Biography

Maria J Rodrigues has a Degree in Biology (Major in Biomedicine) and a Master's in Biomedical Sciences. She has interest in exploring new biotechnological applications and products from marine organisms (halophytes, microalgae, macroalgae and marine invertebrates) found in the Algarve coast. She has been working as a Research Fellow in the Marine Biotechnology group under the scope of different projects: SEABIOMED (marine photosynthetic organisms of the Algarve coast with biomedical applications, XtremeBio (halophytes: a precious resource nutritional elements and bioactive compounds, MaNaCruzi (searching for marine origin molecules against *Trypanosoma cruzi*, and recently Xtreme Gourmet (extremophile plants in the gourmet cuisine). Since 2014, she has been working on her PhD project: "Unravelling the biotechnological potential of halophytes species of the Algarve coast". During this time, she participated in the preparation of 27 scientific articles published in international peer-reviewed journals and 17 communications in national and/or international conferences (oral and poster).

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