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20 anos CROMATOGRAFIA

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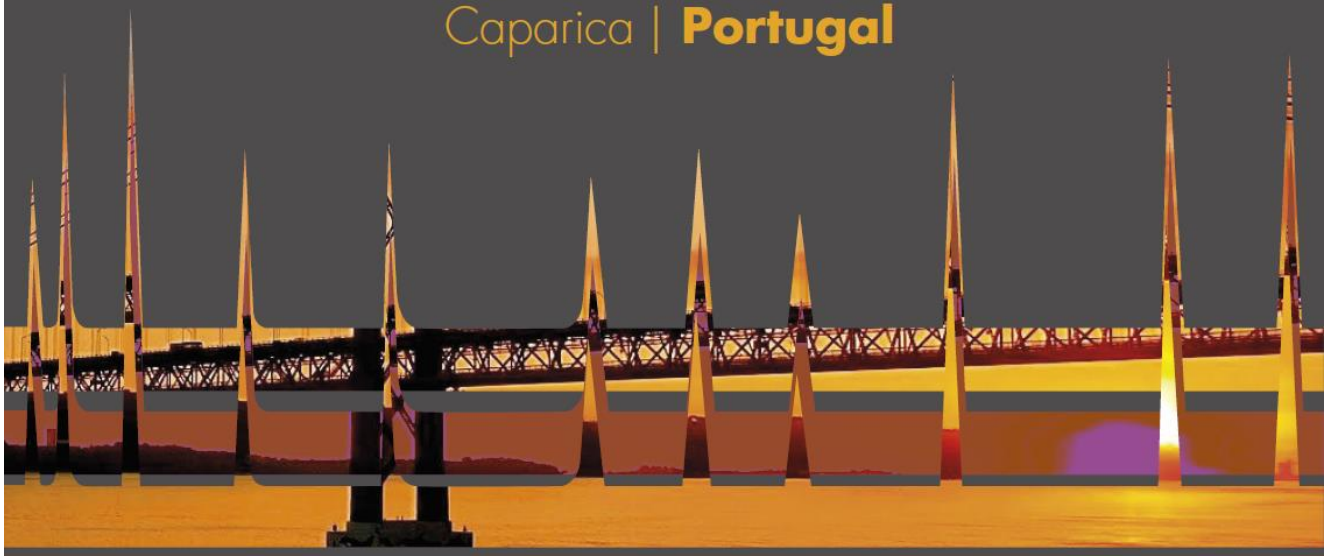

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O07 *Cytinus hypocistis* (L.) L. extract as a source of anti-aging cosmeceutical ingredients

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Plant-derived compounds have been extensively used for cosmeceutical applications, especially because humans have once again turned to Nature to mitigate the relative void of combinatorial chemistry, to find new molecules and the toxicological effects associated with the synthetic ones [1]. *Cytinus hypocistis* (L.) L. is a wild edible parasitic plant on various members of the *Cistaceae* family. Although its biological properties were potentially attributed to its hydrolysable tannins content, to the author's best knowledge, its chemical composition is largely unknown, and active biomolecules are not yet identified [2]. According to a semi-quantitative study, where 100 extracts obtained from plants collected in India, Africa, and the Mediterranean area, *C. hypocistis* figures on the top 10 group of plants that potently inhibited both elastase and tyrosinase, two main enzymes involved in skin aging [3]. Thus, studying the bioative properties and chemical composition of *C. hypocistis* plant will give comprehensive clues on its potential cosmeceutical applications.
Plant specimens of *C. hypocistis* were collected in June 2018 in Castro Daire, Portugal. After lyophilisation, the phenolic compounds were analysed in the hydroethanolic extracts of four different parts of *C. hypocistis* (whole plant, nectar chamber of the flower, petals, and stalks) using a HPLC-DAD-ESI/MSn system. The antioxidant activity of the four extracts were evaluated using OxHLIA and TBARS methodology. Anti-tyrosinase enzyme inhibitory assay was performed using L-DOPA as substract and kojic acid as standard. *C. hypocisti*s extracts were also tested for their antibacterial activity based on minimum inhibitory and bactericidal concentrations and the anti-inflammatory activity was evaluated through NO inhibition, in LPS-activated murine macrophage (RAW 264.7).
A total of 17 phenolic compounds were identified, being galloyl-bis-HHDP-glucose, digalloyl-bis-HHDP-glucopyranose, and pedunculagin the most abundant. UV radiation generates oxidative stress, being mainly responsible for cell membrane oxidation and, although through different mechanisms, OxHLIA and TBARS are equally a consequence of lipid peroxidation. All the tested extracts showed high antioxidant capacity, with the petals exhibiting the most promising results for both OxHLIA (IC_{50} = 279 ± 5 ng/mL) and TBARS (IC_{50} = 342 ± 2 ng/mL) assays. Considering the anti-tyrosinase inhibitory assay, the main enzyme involved in skin pigmentation, the stalks presented the lowest IC_{50} values, 0.09 ± 0.02 mg/mL. All tested extracts displayed a broad-spectrum microbial inhibition against both Gram-positive and Gram-negative bacteria. Moreover, being chronic inflammation one of the molecular mechanisms behind skin aging, the petals result for NO inhibition (IC_{50}: 127 ± 8 µg/mL) is an important evidence on the versatile profile of this plant.
Although for the four studied samples the 17 identified phenolic compounds were the same, its concentration was higher in the petals extract, followed by the stalks, being these two plant parts of *C. hypocistis* unveiling the strongest bioactive potential. These results point a potential correlation between the phenolic profile of *C. hypocistis* and its properties. For its bioactivity validation and mechanism investigation, further studies on fractionation, isolation and characterization of compounds of the extracts of *C. hypocistis* are currently ongoing.

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References:

1. J.D. Phillipson, Phytochemistry. 68 (2007) 2960–2972.
2. P. Zucca, M. Pintus, G. Manzo, M. Nieddu, D. Steri, A.C. Rinaldi, BMC Res. Notes. 8 (2015) 562.
3. I. Chiocchio, M. Mandrone, C. Sanna, A. Maxia, M. Tacchini, F. Poli, Ind. Crops Prod. 122 (2018) 498–505.