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BOOK OF ABSTRACTS

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Physicochemical and nutritional characterization of the leaves, flowers and fruits of Chorão da praia (*Carpobrotus edulis*) from Portuguese west shores

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Leaves, flowers and fruits from the edible halophyte Chorão da praia (*Carpobrotus edulis*), harvested in Portuguese west shores, were characterized regarding their proximate composition, phenolic compounds and antioxidant activity. Flowers and leaves had similar protein content (5.42 ± 0.15 and 5.22 ± 0.13 % DW, respectively), being higher than fruits (4.67 ± 0.22 %). No significant differences were observed in the lipid fraction, ranging from 1.70 ± 0.12 in flowers to 1.90 ± 0.16 % DW in leaves. Fruits presented the highest value of total carbohydrates (71.5 ± 1.2 % DW), whereas ash was more abundant in leaves (32.00 ± 0.35 % DW) that also showed the highest chlorophylls content, comprising 52.0 ± 7.2 $\mu\text{g/g}$ chl a and 26.2 ± 8.2 $\mu\text{g/g}$ chl b. Similar levels of total carotenoids were observed in leaves and flowers (5.7 ± 1.6 and 4.6 ± 1.4 $\mu\text{g/g}$ DW, respectively), being significantly higher than fruits (2.8 ± 0.2 $\mu\text{g/g}$ DW). Aqueous-ethanolic (1:1, v/v) extract of flowers exhibited the highest total phenolic content (299 ± 8 $\mu\text{g/mg}$ of gallic acid equivalents), by the Folin-Ciocalteu method, as well as the strongest antioxidant activity (3.25 ± 0.21 and 2.38 ± 0.07 $\mu\text{mol/mg}$ of trolox equivalents by the DPPH and FRAP methods, respectively), followed by leaves (1.68 ± 0.16 and 1.36 ± 0.14 $\mu\text{mol/mg}$) and fruits (0.58 ± 0.13 and 0.71 ± 0.03 $\mu\text{mol/mg}$). Bulk polyphenol extracts were further purified through Solid-Phase Extraction (SPE), using C18 reversed-phase sorbent Oasis[®] Prime HLB Extraction cartridges. Polyphenols in purified extracts were initially analyzed by RP-HPLC-DAD and a separation chromatographic method was developed and optimized. The optimal elution program was further used for the separation and identification of polyphenols via RP-HPLC-ESI-MS/MS. Mass spectra unfolded the complete or partial separation of molecular species of polyphenols. Moreover, mass and tandem mass spectra revealed that the most abundant species in all extracts were glycosylated and/or acetylated O-Methyl flavonols. It was observed compounds mainly derived from syringetin and laricitrin. Each of these two aglycones revealed two major compounds: two [M-H]⁻ ions with m/z 653 (syringetin derivatives) and two [M-H]⁻ ions with m/z 639 (laricitrin derivatives). In both cases, the MS² data of the [M-H]⁻ ions showed high intensity fragment ions with m/z 345 and 331, respectively, corresponding to the loss of a glucosyl- α -arabinofuranoside or an acetylated glucoside [M-308]. Moreover, the MS³ data of the two most intense fragment resulted in successive loss of methyl groups with the first one presenting the highest intensity. Regarding the profile in polyphenols, when comparing leaves, flowers and fruits, one concluded that there are clearly differences in the relative amount of these polyphenols being flowers richer in the syringetin derivatives.

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