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(#27) Persistence of antioxidant properties of *Carpobrotus edulis* L. extract after *in vitro* digestionDaniela Oliveira^{1,2,*}, Maria Inês Dias³, Lillian Barros³, Luísa Custódio⁴, Rui Oliveira^{1,2,5}

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*danielaoliveira@bio.uminho.pt**Resumo**

The human being is unknowingly exposed to many toxic chemicals through diet, which can trigger an excessive production of reactive oxygen and nitrogen species that can cause a redox imbalance and generate oxidative stress in the gastrointestinal tract, potentially contributing to the development of degenerative diseases. In fact, oxidative stress has been indicated to contribute to all three phases of carcinogenesis. Thus, the attenuation of oxidative stress could contribute to the prevention of cancer initiation.

Halophytes are associated with strong antioxidant capacity, which makes them excellent candidates to attenuate the oxidative stress in the gastrointestinal tract. For instance, *Carpobrotus edulis* L. is an edible halophyte that has been reported for its antioxidant properties and high content in phenolic compounds. However, most of these studies did not consider the impact of digestion, which can alter the chemical structure of the phytochemicals and possibly their bioactivities. To our knowledge, there are no studies considering the effect of digestion on the antioxidant properties of *C. edulis*.

The objective of this work was to evaluate the impact of digestion on the chemical composition and antioxidant capacity of *C. edulis* aerial part ethanol extract (CEE). The extract was subjected to *in vitro* simulation of human digestion (IVD) and at the end we obtained the digested extract that becomes available in the colon (DCEE). Both forms of the extract were subjected to chemical characterization by the Folin-Ciocalteu method and by LC-DAD-ESI/MS to detect alterations caused by IVD. The antioxidant capacity of CEE and DCEE was evaluated *in vitro* by determination of scavenging of nitric oxide (NO) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) radicals and in viability assays against hydrogen peroxide (H₂O₂) in the yeast *Saccharomyces cerevisiae*. The results showed that the phenolic composition of CEE was severely affected by IVD, as well as the capacity to scavenge the DPPH radical. In opposition, the capacity to scavenge the NO radical increased. Moreover, CEE protected yeast cells against H₂O₂, corroborating the antioxidant properties reported in the literature. These properties seem to persist after IVD, but at a lower extent. Thus, although the IVD significantly altered the chemical composition of CEE and decreased the antioxidant capacity, the beneficial effect is still relevant since it provided protection against oxidative stress in the viability assay in *S. cerevisiae*. Therefore, *C. edulis* seems to have potential to be included in the human diet to decrease the oxidative stress generated in the gastrointestinal tract due to the recurrent consumption of contaminated foods and thus could play a role in the prevention of carcinogenesis.

Keywords: Phenolic compounds, Oxidative stress, Bioactivity, Halophyte, Simulation of digestion

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