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## PUMPKIN BIORESIDUES AS SOURCES OF BIOACTIVE COMPOUNDS FOR FOOD APPLICATION

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According to FAO data, in Europe, almost half of fruit and vegetable production is lost or wasted [1]. Part of this occurs in the industry during processing stages of these commodities, resulting in huge amounts of waste in the form of peels, seeds, liquid, and molasses [2]. Nevertheless, these residues are rich in organic matter, phytochemicals, and compounds with nutraceutical properties [3]. Focusing on the valorisation of these residues, which compounds have commercial potential and aiming at promoting a circular economy, the present work focused the evaluation of the bioactive properties of the bioresidues generated in pumpkin pulp production. For this purpose, the peel, seeds, and fibrous strands of three pumpkin varieties grown in Portugal (butternut squash, common pumpkin, and kabocha squash) were evaluated in terms of antioxidant capacity, through 3 chemical (DPPH scavenging activity, reducing power and  $\beta$ -carotene bleaching inhibition) and 2 biological (TBARS and OxHLIA) methods. Additionally, their cytotoxicity was assessed through the *in vitro* sulforodamine B (SRB) assay, tested in a primary culture of cells prepared from porcine liver.

Regarding the antioxidant activity evaluation, all the samples presented great antioxidant capacity, showing  $IC_{50}$  values ranging from about 50 times higher than the positive control, Trolox, to about 14 times lower than Trolox. The fibrous strands and seeds showed better antioxidant capacity than the peels, with the fibrous strands revealing great antioxidant capacity in the employed chemical methods, and the seeds in the biological ones. In terms of pumpkin varieties, the kabocha squash presented the best result in 3 of the 5 assays (DPPH,  $\beta$ -carotene, and TBARS). Regarding cytotoxicity, the effect of inhibiting non-tumour cell growth was not observed for any of the samples, even at the highest concentration (400  $\mu$ g/mL), which is of great importance for considering their inclusion into foodstuff. These preliminary results showed a great potential for the exploration of pumpkin bioresidues to develop natural additives with antioxidant properties to be included in food products, fostering the circular economy.

### References

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