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Flash Communications

Abstracts

Bioactive properties of bio-residues from food industry: pumpkin seeds, peels, and fibrous strands

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The limitation of natural resources, together with current consumer trends and needs, demand the implementation of sustainable food systems, able to produce healthier products and fulfil circular economy principles. The food industry is under pressure to offer healthy, convenient, and ready-to-eat foods, able to meet daily nutritional needs, provide pleasure and satiety, and attend to consumers' growing expectations and safety issues [1]. Given its high nutritional value, pumpkin is one of the most important sources of sustenance of the poorest regions in the world. Nevertheless, during the industrial processing of this fruit, about 25% of the pumpkin is wasted, being this by-product mainly constituted by peels, seeds, and fibrous strands [2]. Through the present work, these bio-residues were assessed in terms of bioactive properties, namely the lipid peroxidation inhibition capacity (TBARS) and the anti-hemolytic activity (OxHLIA), as also the cytotoxicity against a primary culture of non-tumor porcine liver cells (PLP2), by the sulforodamine B assay. Three pumpkin varieties grown in Algeria were studied, namely Cucurbita pepo (common pumpkin), Cucurbita moschata (butternut squash), and Cucurbita moschata (Musquée de Provence).
Regarding the antioxidant activity, in the TBARS assay, the seeds stood out for all the varieties, with the best result being presented by the common pumpkin. The seeds of this variety showed an IC50 value of about 1.5 times lower than that of the positive control, Trolox. On the other hand, in the OxHLIA assay, the results were quite similar between the type of bioresidues and between the varieties. Despite their strong lipid peroxidation inhibition capacity, the seeds of the common pumpkin did not present anti-hemolytic properties. Regarding cytotoxicity, the effect of inhibiting non-tumor cell growth was not observed, even at the highest tested concentration (400 µg/mL), which is of great importance in food safety. These preliminary results are the basis for future studies aiming at the valorization of bioresidues from food industry, allowing its application as food additives, for preservative purposes.

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