

Valorisation of olive processing waste for the development of value-added products

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Abstract

In our study olive leaves from oil mills waste were used as a source of bioactive compounds with great antioxidant and anti-aging activity, for the creation of value-added products. More specifically, a modified olive leaf extract was encapsulated in starch with spray drying. The produced microparticles were characterized regarding their morphology and size distribution, the type of interactions in the system, the thermal stability and the encapsulation efficiency (EE). Moreover, the generated structures were used as the bioactive compounds in a cosmetic formulation and a dietary supplement. Stability-microbiological tests and in-vitro dissolution tests were performed in the final products respectively. The physicochemical characterization of the particles showed round and uniform structures with physical inclusion of the extract, good thermal properties, sensitivity to high humidity and an EE of 81.34 %. Finally, the produced cosmetic cream showed great heat stability after 6 months stay in four temperatures (from 5 to 45 °C) with little or no differences in pH, appearance and microscopic structure while the dissolution test for the supplement showed the release of the extract, mainly, in the small intestine proving that olive leaves can be transformed into a great source for value-added products with nutritional, health and antioxidant benefits.

Keywords

Waste management and valorisation, olive leaf extract, encapsulation, spray drying, cosmetic cream, food supplement