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FOOD INDUSTRY BY-PRODUCTS

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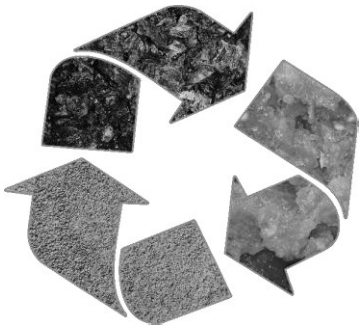

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VALORIZATION OF ROSEHIP (*Rosa canina*) FOOD INDUSTRY BY-PRODUCT USING GREEN SOLVENTS

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Rosehip (*Rosa canina* L.) represents a very important commercially traded medicinal plant used in the production of different food products such as marmalade, jam, beverages, jelly, syrup, and tea. During production, substantial amounts of by-products that can contain pericarp and seeds are generated. These materials have bioactive components such as pigments, fatty acids, and polyphenols which have applications in the pharmaceutical, food, and cosmetic industries.
In this study, by-products were used from the beverages industry, rosehip seeds (RS), and herbal dust (RHD) which is a filter tea industry by-product with a particle diameter smaller than the diameter of a filter bag pore size (less than 0.315 mm).
To achieve a rational use of these by-products, green solvents supercritical carbon dioxide ($ScCO_2$) and deep eutectic solvents (DES) were used. For the extraction of lipophilic compounds, $ScCO_2$ extraction was conducted under the following conditions: pressure 300 bar, temperature 40 °C, and extraction time 4h. The extraction yield equaled 4.06% for RS, whereas the RHD extraction yield was 5.42%. After removing the lipophilic fraction, the material was further used in the ultrasound-assisted extraction with DES. The ultrasound-assisted extraction was performed at two temperatures (40 and 60 °C) and three extraction times (30, 60, and 90 min) with DESs of different polarities. Obtained extracts were characterized in terms of antioxidant capacity and content of pigments and polyphenolic compounds. It was determined that RS represent an excellent source of bioactive compounds and that green solvents can convert them into highly valuable products.

Keywords: *Rosa canina*, supercritical carbon dioxide, deep eutectic solvents

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