

Sunflower Waxes from Oil Refining By-product and Agrofood Waste to a Valuable Products

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Abstract

Oilseeds and crude oils (including rapeseed, safflower, corn, cotton), and particularly sunflower, contain waxes, typically ranging from 1.5% to 3.0% and 0.02% to 0.35%, respectively. Waxes are high molecular weight compounds, esters of fatty acids (C16-C24) and alcohols (C26-C32), and possess specific physicochemical characteristics. Waxes are removed during the oil refining process in the winterization step and potentially represent a valuable and interesting raw material for various applications. After crystallization and filtration during the winterization step, in addition to oil, a filtration cake is obtained (averaging 4 kg/t of refined oil). This cake contains the majority of the oil absorbed by the filtration aids (from 15% to 30%) and all the waxes removed from the oil (from 10% to 35%). Currently, the filtration cake is primarily treated as “waste,” being discarded in landfills, used for combustion, or, if possible, serving as a component in animal feed. However, valorization is possible through selective extraction of waxes from the filtration cake. This approach adds value to this “waste,” as the price of sunflower waxes varies from €40 to €80/kg. Extracted sunflower waxes can serve as a very significant functional component in food, cosmetic, and pharmaceutical products.

Keywords

Waxes, Sunflower, Winterization, Filtration Cake