

ProRef

Consumer of edible oils pay attention to appearance, flavor and scent, safety, health effects and the adequacy for which it is intended. Thus, seed oils and olive-pomace oils have to be refined. This complex process eliminates unwanted color, odor and flavor, making oils acceptable to consumers.

Additionally, contaminants, which might be toxic or have negative influence on oxidative stability, are removed. Nevertheless, many bioactive compounds of nutritional interest, amongst others phytosterols, tocopherols or polyphenols, are lost in part during the refining. Besides this, main disadvantages of refining are high losses of neutral oil, high waste water streams and need of chemicals during degumming and neutralization. Furthermore bleaching and deodorization exert negative impact in terms of energy consumption, use of raw materials and formation of undesired by-products.

The objective of this project is to develop a novel refining process of oils that compared to the current procedures allows to simplify the whole process and minimize the energy requirements, the quantity of by-products and in turn the losses of bioactive components. Furthermore this project aims to develop technological strategies for the recovery of specific bioactive components of the by-products with high added value for food, feed, cosmetic and pharmaceutical sectors. Different strategies based on the use of membrane technology, innovative solvent extraction, supercritical fluid extraction and physical purification supported in part by enzymatic reactions will be recombined to remove refining constraints and ensure optimal separation of specific bioactive compounds. The project will focus on rapeseed, sunflower and olive oil because they constitute more than 95% of the EU oil production.

The project intends to increase competitiveness of the oil sector at an EU scale by a better valorization of raw materials, improvement of process efficiency and development of products with high added value.