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IRODDI project or how to take advantage of the residual streams of oils and fats refining

The new BBI JU project IRODDI, which involves widely experienced organizations within the consortium, has held its kick-off meeting virtually and officially started to work in the project.

IRODDI (Innovative Refining process for valorization of vegetable Oil Deodorizer Distillates) is a new project funded by the Bio-Based Industries Joint Undertaking (BBI JU) under the European Union's Horizon 2020 Research and Innovation programme (grant agreement N° 887407) aimed to develop new **biobased products** using **Free Fatty Acids (FFAs)** contained in the **residual side streams** of the **refining process of oils and fats, as well as develop innovative technologies for isolation of valuable minor compounds contained in them using softer operational conditions**. The 36-months project has virtually held its kick-off meeting last 22nd September and officially started to work together in the planning of the work to be done the next months.

This project is focused on the development of soft greener processes for obtaining bioproducts with specific properties derived from the **FFAs** contained in **deodorization distillates (DODs)**, the side streams of deodorization processes. These are the last steps in the refining process of oils and fats, where compounds that are responsible for the odor, color, and unacceptable flavor in oil are removed by vacuum distillation. Due to the conditions of the distillation process, some fractions of minor components are also separated and become an important part of the product. Thus, valuable compounds such as tocopherols, tocotrienols, phytosterols, and free esterified, hydrocarbons such as squalene, plus mono- and diglycerides, FFAs, and triglycerides can be also found in the DODs by entrainment.

IRODDI project aims to recover these valuable compounds from the side streams and obtain new, high-value bioproducts as:



1. **Bio-compatible and eco-friendly surfactants** with increased solubility in cold water (by chemical neutralization of FFAs with eco-friendly ionic liquids)
2. **Biodegradable base-oils** that can be directly used in the formulation of **biolubricants** (by enzymatic esterification reactions with the deodorization distillates mixtures)
3. Sustainable polyols synthesis for **polyurethanes** production (using DODs as raw materials).

IRODDI aims also to retrieve **tocopherol** and **squalene** using innovative technologies that do not deteriorate the quality of these components.

The outcomes of the project will be focused on the demonstration of the applicability of these components in different industrial sectors: **food-grade detergents** (surfactants), **biolubricants** (base-oils), **adhesives** (polyols), and **cosmetics** (minor compounds such as squalene), to contribute -through the bioeconomy- to a sustainable and decarbonized EU by replacing fossil-based materials for bio-based alternatives (biomass).

The consortium is composed of highly complementary partners spread around Europe: **FeyeCon** and **Zer0-E** from the Netherlands, **Fraunhofer**, **IoLiTec** and **Jowat** from Germany, **Sophim** from France, and **BIOPLAT**, **Instituto de la Grasa - CSIC**, **Kliner Profesional**, **Sophim Iberia**, and the leader, **Fundación Tecnalia Research & Innovation**, from Spain.

MEDIA CONTACT

Project coordinator (Fundación Tecnalia Research & Innovation)

Pablo Ortiz – pablo.ortiz@tecnalia.com

Olga Gómez de Miranda – olga.gomez@tecnalia.com

Communication Manager (Spanish Technology and Innovation Platform “Biomass for the Bioeconomy” – BIOPLAT)

Margarita de Gregorio – margadegregorio@bioplat.org