Life Integrated Process for the Enzymatic Splitting of triglycerides

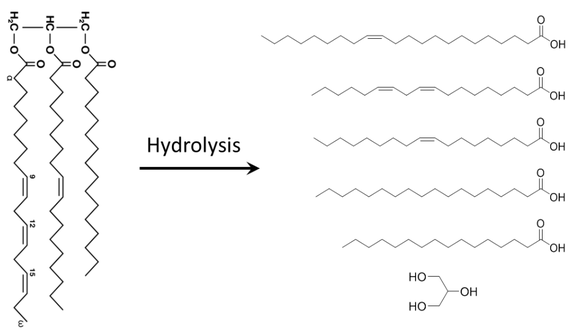
Project: LIPES
Partners: Oleon, Biocatalysts Ltd, STC-Engineering GmbH, TUBerlin, DSM
Duration: September 2016– August 2021
Project Coordination: Oleon, Sandrine Lacourt
Poster Presenter: DSM, Wilco Appel

Total budget: € 4,3 M
Type of action: Innovation action - Demonstration
Value Chain: VC3 – agrobased

E-mail: Sandrine.Lacourt@Oleon.com
E-mail: Wilco.Appel@dsm.com

LIPES is dedicated to bringing the first market replication of greener and healthier fatty acids. The objective is to create high purity bio-based intermediates and end products from vegetable oils and fats.
The LIPES approach replaces current thermal hydrolysis and saponification production routes, instead using a new enzyme-based, environmentally friendly alternative. Using this approach will make the process far more resource efficient, saving at least 45% water, 70% enzymes and 80% energy over current approaches.

Vegetable oil

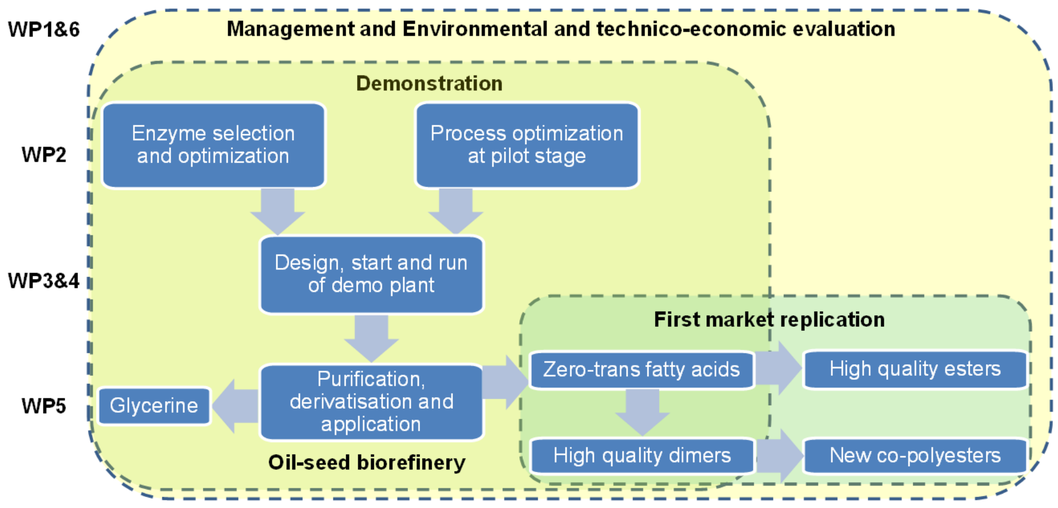


Fatty acids and glycerol

Renewable monomers and products

Objectives:

- To perform the scale-up to pre-industrial level of a new environmentally friendly alternative to the traditional and current splitting routes of triglyceride producing free fatty acids and glycerol, thus at a lower variable and investment costs and in very resource-efficient way with a minimum saving of 45% water consumption, 70% of enzymes and 80% of energetic consumption
- To enzymatically produce selected commercially important fatty acids at an overall lower variable cost than the current processes and to showcase their use as intermediates in a wider range of application.
- To contribute to reaching the EC goals on waste reduction by elaborating and evaluating new value chains for making use of agricultural co-products



Expected impacts:

- Strengthen the competitiveness of EU oleochemicals industry in a context of growing competition with Asian bio-based products through a cost effective process leading to high performance products
- Sustainable and innovative integrated new process leading to high quality products along the whole value chain
- Competitive biotech pathway as compared to the conventional processes
- Selection of enzyme(s) selective for vegetable oil hydrolysis
- Competitive biotech process as compared to the conventional processes

Applicability:

- Efficient enzyme for enzymatic splitting of oils
- New low trans fatty acids for food application
- High quality fatty acids for improved dimer acids (C36 and C44)
- New grade of Co-polyesters

Status:

- Enzyme selection and optimization for castor oil
- Process optimization for hydrolysis and enzyme recycling ongoing
- Design and construction on demo plant started

Project partners:

http://www.lipes.eu

Acknowledgement
This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation program under grant agreement No 720743