The Research Center Pharmaceutical Engineering GmbH (RCPE) is a global leader in pharmaceutical engineering sciences. We help our partners create and manufacture advanced medicines for patients worldwide through optimizing products and processes.

PAID DIPLOMA / MASTER'S THESIS

OPTIMIZED SYNTHESIS OF AN IMPORTANT ANTIOXIDANT

Ref. No. DA175

To dedicated students of chemical & pharmaceutical engineering or chemistry.

Objective

Currently, the compound of interest, important for its antioxidant acitivity, is manufactured exclusively via fermentation in algae. Although the natural manufacturing route is considered safe, there are numerous disadvantages related to this process. The process is time, labour and cost intensive, global manufacturing does not meet the demand, as well as the final product is challenging to standardize on a batch to batch basis. As such the material is not optimal for formulating pharmaceuticals due to poor crystallization ability and potential solid state stability issues. Therefore, we are aiming for an alternative synthetic route with high product purity.

This master thesis involves:

- The organic synthesis and characterization of antioxidant building blocks, as well as the final molecule according to existing synthetic routes
- Optimization of exisiting synthetic routes to discover a new pathway leading to superior product purity and activity
- Crystallization and further purification of the product
- Characterization of the product in terms of several analytical methods (DSC, MS, NMR, IR and others)

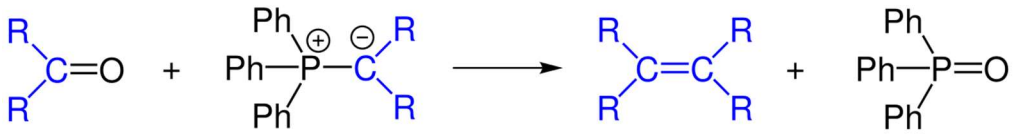

Figure: The final antioxidant molecule is synthesized via double Wittig condensation. The reaction yields a racemic mixture of optical and geometrical isomers. Since the antioxidant activity is only found for the correct optical isomer, the optical isomerisation during an upstream synthesis step will be crucial.

Within the framework of this diploma / master's thesis we offer the following

- Extensive participation in a top-level and industrially relevant research project in an international environment
- Supervised training in the task
- Assistance of experienced staff with the implementation of innovative ideas
- Access to highly modern infrastructure on campus of Graz University of Technology

Financing

- Compensation on the basis of a service contract

If you are interested in writing your thesis at the interface between university research and industry/ business and to contribute to the optimization of product and process development in the pharmaceutical industry, please contact us indicating the reference number.

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