

Enzymatic Carboxylation in Novel Solvents

Master thesis at the
Institute of Technical Biocatalysis



Introduction

Some decarboxylases can not only catalyze the decarboxylation of carboxylic acids, but also the carboxylation of various compounds. The major challenge of the enzymatic carboxylation is the unfavorable thermodynamic equilibrium, which prevents reaching high conversions. A new strategy to overcome this limitation could be using novel solvents that were researched for carbon capture.

Aim

The application of novel solvents for the enzymatic carboxylation of the model substrate resorcinol will be the subject of this master thesis (Figure 1). Within the project, your aim is to determine if these novel solvents can be used as an efficient reaction medium for the enzymatic carboxylation.

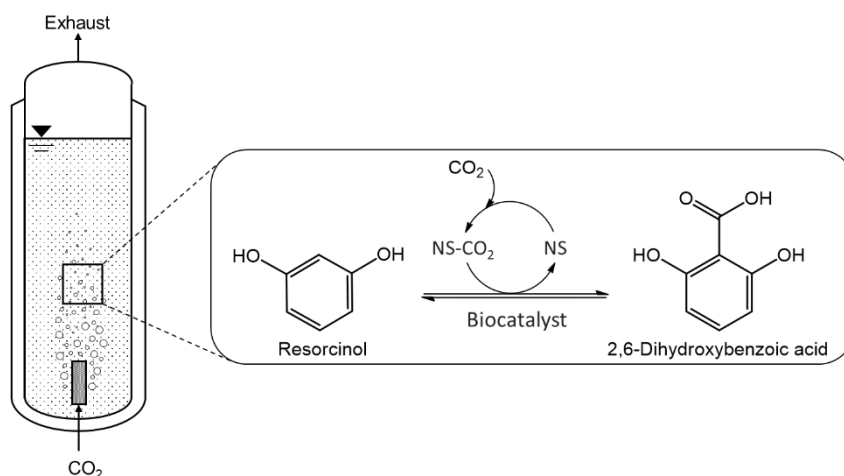


Figure 1: Enzymatic carboxylation of resorcinol to 2,6-dihydroxybenzoic acid in novel solvents (NS).

Your profile:

- You have a Bachelor's degree in bioprocess engineering, biochemistry or related studies
- You work in a motivated, independent and structured way
- You have some experience working in the laboratory

You will gain experience in

- Fermentation for biocatalyst production
- Analytical methods, such as HPLC and FTIR
- Determination of enzyme kinetics and thermodynamic equilibria
- Handling the gaseous substrate CO₂
- Enzymatic carboxylation in different solvents
- Biocatalysis in general

Start: immediately

Contact

Dr. Daniel Ohde
Institute of Technical Biocatalysis
Denickestr. 15 (K), Room: 1508
Phone: +49 40-42878-3118
Email: Daniel.ohde@tuhh.de