HARNESSING THE POWER OF MICROBIAL COMMUNITIES FOR THE PRODUCTION OF GREEN CHEMICALS

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Diese Maßnahme wird mitfinanziert mit Steuermitteln auf Grundlage des von den Abgeordneten des Sächsischen Landtags beschlossenen Haushaltes.

MOTIVATION

Green chemistry still faces several challenges to feasibly replace chemicals derived from fossil feed-stocks. One way to tackle this problem is to harness the potential of microbial communities to efficiently convert complex biomass into valuable chemical products. The goal of the **ERA CoBioTech** project **Cell4Chem** is to convert lignocellulosic biomass into medium-chain carboxylates (MCCs), for which there are several agro-industrial applications.

APPROACH

Enrichment culture

Microbial strains

Constructed consortia

Caproate (C6)

Caprylate (C8)

↑↑ Hydrolysis of cellulose

↑↑ Production of lactate

MICROBIAL STARS

Hydrolyzis of cellulose and hemicellulose

- Xylan and cellulose enrichment cultures
- Cellulolytic microorganisms ✳

Production of lactate

- *Lactobacillus* spp.
- *Lactobacillus* spp. ✳

Chain elongation

- *Clostridium* sp. BL-3, BL-4 and BL-6 [1]

✳ Genetically modified strains

CONSORTIA MONITORING

Who is in the consortia?

16S rRNA gene

What is the functional potential of the consortia?

Metagenome-assembled genomes

What are the consortia doing?

Metaproteomics

Cell4Chem is expected to advance our knowledge on the construction and application of engineered microbial communities for the green chemical production.

[1] Liu et al. (2020) Microorganisms. https://doi.org/10.3390/microorganisms8121970

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