



Technische
Universität
Braunschweig

Masterarbeit

Xylitol metabolism in *Phaeobacter inhibens*



Background

Members of the Roseobacter group are some of the most prevalent prokaryotes in marine ecosystems. Known for their remarkable metabolic versatility, these bacteria play a significant role in global marine biogeochemical cycles. Although well-established model organisms like *Phaeobacter inhibens* DSM 17395 have been extensively studied, questions still remain concerning their biosynthetic pathways and catabolic capabilities, including the metabolism of sugar alcohols.

Objectives

The main goal of this project is to study the xylose and xylitol metabolism in *Phaeobacter inhibens* DSM 17395 and P88. As not both isolates are capable of using xylitol as sole carbon source, this master project should identify the xylitol degradation pathway and compare it to the common xylose degradation in both organisms by a metabolomics approach using stable-isotope labeled substrates.

Main methodology

Cultivation of *Phaeobacter inhibens* in defined medium with single carbon sources, growth curves, metabolite extraction, GC-MS sample preparation and measurements, MS-based data analysis, flux analysis, stable-isotope tracing, enzyme assays in crude extracts, data interpretation and presentation.

The department

The department of Metabolomics & Services is located at the Leibniz-Institute DSMZ in Braunschweig, Science Campus Braunschweig-Süd, and the BRICS (Braunschweig Integrated Centre for Systems Biology) at the TU Braunschweig main campus. Our research focus lies on the investigation of novel metabolic pathways in bacteria and archaea by using mass spectrometry-based metabolomics techniques.



BRICS

Braunschweig Integrated Centre
of Systems Biology

Start: As soon as possible

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