Understanding the 3-hydroxypropionic acid tolerance mechanism in Saccharomyces cerevisiae

3-Hydroxypropionic acid (3HP) is an important platform chemical that can be converted into other valuable chemicals such as acrylic acid and its derivatives that are used in baby diapers, various plastics, and paints. With the oil and gas resources becoming limiting, biotechnology offers a sustainable alternative for production of acrylic acid from renewable feedstocks. We are establishing Saccharomyces cerevisiae as an alternative host for 3HP production. However, 3HP also inhibits yeast growth at levels well below what is desired for commercial applications. Therefore, we are aiming to improve 3HP tolerance in S. cerevisiae by applying adaptive evolution approach. We have generated yeast strains with significantly improved capacity for tolerating 3HP when compared to the wild-type. We will present physiological characterization, genome re-sequencing, and transcriptome analysis of the evolved strains. Consequently, mechanism underlying 3HP tolerance will be investigated.

General information
Publication status: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, KTH - Royal Institute of Technology, Technical University of Denmark
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Yeast
Volume: 30
Issue number: S1
ISSN (Print): 0749-503X
Ratings:
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.09 SJR 1.242 SNIP 0.712
Web of Science (2013): Impact factor 1.742
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Original language: English
Source: dtu
Source ID: n:oai:DTIC-ART:isi/438356264::38227
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2014 › Research › peer-review