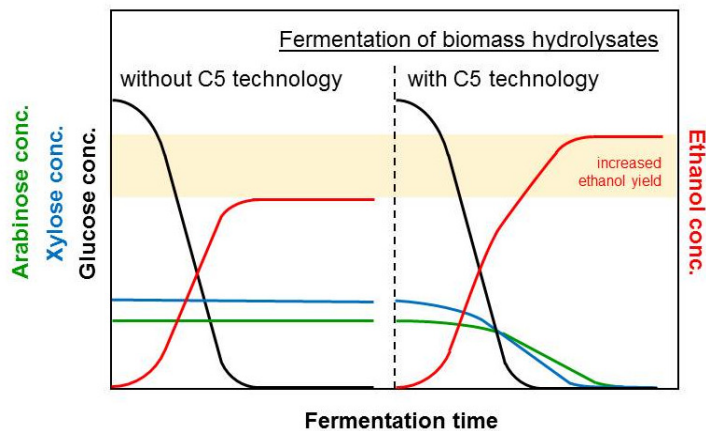


EXPLOITABLE FOREGROUND

Industrial Yeast Strain Fermenting C6 and C5 Sugars

Explanation and Purpose

An industrial *Saccharomyces cerevisiae* strain for fermentation of mixed-sugar lignocellulosic hydrolysates is being constructed which has expression cassettes for overexpression of an optimised pentose phosphate pathway stably integrated in its genome. Moreover, it carries overexpression constructs for the *Clostridium phytofermentans* xylose isomerase and a xylulokinase as well as for an optimised bacterial arabinose utilisation pathway. The recombinant yeast is further optimised for xylose and arabinose fermentation by evolutionary engineering. It will ferment mixtures of glucose, xylose and arabinose efficiently enough for industrial requirements.



Exploitation Strategy

The complete C5-technology of Goethe-University of Frankfurt (GUF), including 4 patents/patent applications, materials, know-how and further developments, has recently been sold to the Swiss biotech company Butalco GmbH for further commercialisation.

IPR Measures

No patent application is planned, but the strain will be commercialised by Butalco GmbH together with interested companies.

Further Research

Overexpression of xylose isomerase will be stabilised. Arabinose fermentation will be further evolved. Evolutionary engineering will be performed to increase ethanol yield and production rate for mixed-sugar lignocellulosic hydrolysates.

Impact of Exploitation

The recombinant yeast strain will ferment, in addition to the C6-sugars, also the C5-sugars present in lignocellulosic hydrolysates. This will increase the ethanol yield by 20-30%.

Novel Microbes and Enzymes for 2nd Generation Bioethanol Production



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