Modified Yeast with Enhanced Tolerance for GVL Biomass Solvent

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WARF: P140430US02

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing GVL-tolerant strains of Saccharomyces cerevisiae for industrial-scale ethanol production.

OVERVIEW

Gamma-valerolactone (GVL) is an inexpensive solvent derived from biomass that can be used to break apart tough lignocellulose into fermentable sugars including xylose and glucose. GVL-based techniques are a potentially transformative breakthrough in biofuel production (for more information see WARF reference number P130123US01).

Problematically, residual levels of GVL found in the sugar products are toxic to yeast, slowing the fermentation process. A solution needs to be found to achieve industrially relevant ethanol production.

THE INVENTION

UW–Madison researchers have developed a genetically modified strain of Saccharomyces cerevisiae that is more resistant to GVL toxicity and grows more than 1.5 times faster than wild yeast in the presence of GVL.

The researchers deleted two genes (Pad1p and Fdc1p) in the yeast that play a role in mediating GVL tolerance. The new strain is the first ethanol-producing yeast specifically tailored for GVL-based techniques.

APPLICATIONS

- Biomass depolymerization and fermentation is the first step in making a wide variety of biofuels and other products.

KEY BENEFITS

- New strain shows increased tolerance for GVL.
- Boosts ethanol yields
- Able to ferment both xylose and glucose sugars

**STAGE OF DEVELOPMENT**

In the presence of GVL, the modified yeast grows 1.5 times faster than the wild type and completely ferments glucose in less time.

**ADDITIONAL INFORMATION**

**Related Portfolios**
**UW–Madison Technologies Developed Through the Great Lakes Bioenergy Research Center**

**Related Technologies**
For more information about GVL-mediated biomass conversion, see WARF reference number P130123US01.
For more information about the streamlined production of GVL from biomass, see WARF reference number P110125US01.

**Tech Fields**
Clean Technology - Biofuels & renewable fuels

**CONTACT INFORMATION**

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