

Super-yeast generates ethanol from energy crops and agricultural residues

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A new type of baker's yeast (*Saccharomyces cerevisiae*) has been developed which can efficiently ferment pentose sugars, as found in agricultural waste and hardwoods. Researchers writing in BioMed Central's open access journal *Biotechnology for Biofuels* describe the creation of the new *S. cerevisiae* strain, TMB3130, which demonstrated significantly improved aerobic growth rate and final biomass concentration on sugar media composed of two pentoses, xylose and arabinose.

Marie Gorwa-Grauslund, from Lund University, Sweden, worked with an international team of researchers to generate the novel micro-organism. She said, "To the best of our knowledge, this is the first report that characterizes molecular mechanisms for improved mixed-pentose utilization obtained by evolutionary engineering of a recombinant *S. cerevisiae* strain".

Normal baker's yeast cannot [ferment](#) pentose sugars at all. By inserting the required genes from other [fungi](#) and bacteria it is possible to make a relatively inefficient transgenic strain that can ferment pentose sugars. Gorwa-Grauslund and her colleagues took one of these recombinant strains, TMB3061, and grew it on a mixture of xylose and arabinose sugars in order to select a stable population most capable of metabolising the pentose [feedstock](#).

She said, "There is considerable interest in developing 'second-generation' biofuels to refine and upgrade non-food material, especially

dedicated energy crops and agricultural residues such as straw, bagasse, stover and corn hulls. Our yeast demonstrates a significant step towards this goal."

More information: Improved xylose and arabinose utilization by an industrial recombinant *Saccharomyces cerevisiae* strain using evolutionary engineering

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www.biotechnologyforbiofuels.com/

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