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Saccharomyces cerevisiae engineered for xylan utilisation

Bioethanol from plant biomass (lignocellulose) is an attractive alternative to fossil fuels and does not compete with human food supplies. Xylan, made up of xylose units, represents a large component of lignocellulose. A Baker's yeast strain was constructed that expresses enzymes required for xylan utilisation. To better understand the utilisation of xylan, the underlying principles of recombinant xylose metabolism was investigated using a metabolomics approach. The central carbon metabolism revealed that transaldolase activity in the pentose phosphate pathway is rate-limiting. In addition, the flux through glucose 1-phosphate and pyruvate in glycolysis limit the rate of xylose metabolism.

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