Clean Technology

MICROBES AND METHODS FOR SELECTIVE DETOXIFICATION OF LIGNOCELLULOSIC BIOMASS

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The Invention

A UW-Madison researcher is developing a bacterial mutant that will be capable of removing the inhibitory co-products from lignocellulosic biomass derived hydrolysates. The inventor started with Pseudomonas putida DSM 6125, which utilizes glucose, but not xylose. The glucose import permease, glucose dehydrogenase, and glucokinase genes were removed from P. putida to generate a triple deletion mutant (P. Putida_oprB-II-/gcd-/glk-). As desired, this mutant did not consume glucose, and the inventor plans to further enhance its performance by increasing its ability to transport/import furfural and HMF (two of the most common inhibitory co-products). At present, the inventor has identified suitable gene clusters in Cupriavidus basilensis DSM 11853, which is known to efficiently consume/utilize furfural and HMF (as well as phenolic inhibitors). Once inserted into P. Putida_oprB-II-/gcd-/glk-, the inventor plans to demonstrate complete removal of inhibitory co-products and successful sugar fermentation using existing/well-established methods.

Tech Fields

- Clean Technology : Biobased & renewable chemicals & fuels

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854