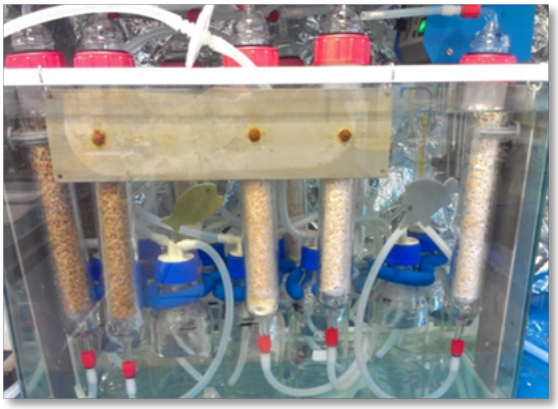
Bioprocesses – White biotechnology – Sustainable development

Lignocellulosic biomasses pretreatment by filamentous fungi for biofuels



Description

INRAE within its join research unit BBF has developed a bioenergy process comprising: the fungal pretreatment of lignocellulosic biomass in solid state by P.brumalis, the hydrolysis, and fermentation of the biomass. The lignin acting enzymes produced by the fungus during its growth allow a selective degradation of lignin. This fungal pretreatment aims to degrade the hemilignocellulosic network to facilitate the subsequent stages of hydrolysis, thanks to a better accessibility of carbohydrate degrading enzymes to their substrate.

Type of expected transfer

License on patent or a license option with R&D program

Advantages

The process improves the enzymatic hydrolysis of lignocellulosic biomasses; The process increases biogas production; The process allows 30 to 50% of delignification (wheat straw); The used strain is wild, lignin selective with a low cellulose and hemicellulose degradation; The process is energetically inexpensive and environmentally friendly

Possible applications

Solid state fungal pretreatment process of lignocellulosic biomasses for 2nd generation biofuels production

Key words

P. brumalis, biomass, lignocellulosic, biofuels, pretreatment, biogaz, solid state fermentation

TRL Scale

1 2 3 **4** 5 6 7 8 9

Development level

The patent PCT/IB2015/058403 protects the utilization of the basidiomycete strain P.brumalis for the solid state pretreatment process of lignocellulosic biomasses.

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Date: 14-09-2020