WHAT IF WE COULD TRANSFORM WOOD INTO FOOD PRESERVATIVES?

We would save heaps of biomass from going up in smoke

Solution: Converting plant biomass into high-value chemicals with the help of improved microorganisms.

Did you know?
Plant dry matter is the largest renewable biomass feedstock on Earth. Converting this resource to useful compounds for food, feed and pharmaceutical purposes could help to contribute to the 12th UN Sustainable Development Goal of Responsible Production and Consumption.

Plant dry matter, or Lignocellulosic biomass, can come from many different sources, ranging from forests (trees, bushes, and grass) and forestry (sawmill and paper mill discards) to agricultural waste (corn stover, sugarcane bagasse, straw etc.). Energy crops are farmed precisely for their high yield of lignocellulosic biomass that serves as input for making biofuels. Unfortunately, today not all lignocellulose can be used to its full potential, a lot of it being incinerated for energy or - at best - converted to ethanol.

With genome editing, the EU-funded project "iFermenter" aims at developing intelligent fermenters that can be used to produce high-value chemicals from the 14 million tons of sugar residuals that are annually produced in Europe. From these sugar residuals, smart fermenters will generate chemicals for the food, feed and pharma industry, an industry that constitutes over €1000 bn. This increases the value from the residual sugars from €0.5 / kg to €50- 150 /kg for antimicrobials for food and feed preservatives and to €40-200 /kg for chemicals for the health sector.

Developing fermenters that can achieve this conversion requires enhanced microbes, also called cell factories. This is where genome editing enters the picture. Genome editing is a collection of precision genetic engineering tools that allow scientists to change the individual letters of the genetic code in an efficient and easy way. The researchers from iFermenter are enhancing cell-factories by editing strains of microorganisms that can consume sugar residuals to produce the antimicrobial chemicals. In addition, the project seeks to counter the low productivity and yields of current sugar-fermenters by designing intelligent fermenters that communicate with the cell factories during fermentation. The project will run until April 2022 and, if successful, the EU's 4 million Euro investment will bring us one step closer to a sustainable and circular bioeconomy.

Genome editing is **#InspiredByLife**

REFERENCES:

https://ifermenter.eu/
https://cordis.europa.eu/project/rcn/217766/factsheet/en

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