



Biomanufacturing proliferates in chemicals

In the quest for increased sustainability, a lot has been made of the potential to use bio-based raw materials, captured CO₂ and recycled plastics as raw materials for new chemicals. But what about using biotech processes to manufacture chemicals? Could it offer a more sustainable alternative to traditional petrochemical processing, and be more amenable to biobased raw materials?

It's something companies both large and small are investigating. Covestro, for example, has a pilot plant at its headquarters site in Leverkusen, Germany, making aniline from biomass via a fermentation process. This basic chemical is typically manufactured from naphtha; the fermentation requires much milder conditions, and the intermediate isolated from the fermentation is then transformed to aniline via a catalytic reaction.

BASF, meanwhile, has been working on industrial biotechnology for more than three decades, first for the animal feed enzyme phytase, and then shifting vitamin B₂ production from a chemical to a biotech process more than 20 years ago.

It is now possible to rewire the cellular metabolism to use unconventional raw material streams to produce interesting molecules.

Outsourcing to a CMO in the early stages is vital for start-ups looking to make chemical products via fermentation, as they are unlikely to have the resources to build their own production capacity before they have proved viability. It allows the concept to be proved before the cash is spent.

Michele Stansfield, co-founder and chief executive at Australia-based Cauldron Ferm, believes the fact that biomanufacturing can be optimised for a wide range of resource-efficient products make it a promising alternative to petrochemical-based manufacturing. 'A key advantage of using fermentation to produce chemicals is reducing the reliance on non-renewable fossil fuels,' she says. 'Fermentation also presents a safe, lower energy consumption alternative. Unlike many chemical manufacturing processes that require high heat or pressure, fermentation typically operates at lower temperatures and pressures. Biomanufacturing also allows for the manufacture of complex biomolecules such as proteins, which are not readily made by chemical synthesis processes.'

Reference:

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