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Biological Production of Industrial Small Esters

Tech ID: 24008 / UC Case 2013-827-0

ABSTRACT

Microorganism engineered to produce various C4-C8 esters.

FULL DESCRIPTION

Researchers at the University of California, Davis have produced small esters (C4-C8) through the manipulation of microorganisms. A genetically modified microorganism was used to produce C4-C8 esters. These esters are used in nitrocellulose lacquers, coatings for plastic substrates, high solids coatings, artificial flavouring and fragrance.

Compared to the current ester production methods which heavily depend on petroleum, this invention allows for environmentally friendly and sustainable production from a renewable source. Additionally, these esters have limited solubility in water, generating a bilayer that allows for continuous microbial production and easy purification.

APPLICATIONS

- ▶ Lacquers solvents
- ▶ Ingredient in painted coatings
- ▶ Food flavorings (orange, pineapple, pear, banana)
- ▶ Cosmetics
- ▶ Fragrances

FEATURES/BENEFITS

- ▶ Environmentally friendly
- ▶ Continuous production
- ▶ Easy purification

RELATED MATERIALS

- ▶ [Two-dimensional isobutyl acetate production pathways to improve carbon yield \(Nature Communications\)](#) - 06/25/2015
- ▶ [Engineering new routes to biochemicals](#) - 06/25/2015
- ▶ [PCT patent application PCT/US2014/053587](#) - 03/05/2015
- ▶ [Sweet smell of sustainability: renewable sources for artificial scents](#) - 03/10/2014
- ▶ [Expanding ester biosynthesis in Escherichia coli \(Nature Chemical Biology\)](#) - 03/09/2014

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,174,348	01/08/2019	2013-827

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Using Escherichia coli to Produce Human Milk Oligosaccharide Lactodifucotetraose](#)
- ▶ [Biological Conversion of Ethylene to n-Butanol and Other Chemicals Using E. Coli](#)
- ▶ [Renewable Energy Synthesis System](#)

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OTHER INFORMATION

KEYWORDS

biocatalysis, esters,
microorganism, fragrance,
food flavoring, fruit
flavoring, cosmetic,
lacquer, paint, thinner,
coating, genetically
engineered microorganism

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Food
 - ▶ Industrial/ Energy
 - ▶ Other
- ▶ **Materials & Chemicals**
 - ▶ Chemicals

RELATED CASES

2013-827-0

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