

Manufacturing of natural flavor substances

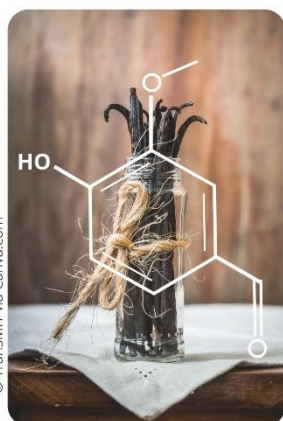
Flavors, fragrances, enzyme-based manufacturing process, green chemistry, white biotech, food biotech

DESCRIPTION OF TECHNOLOGY

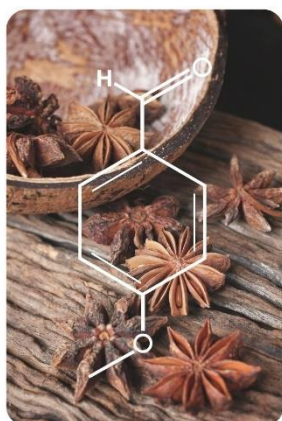
A wide variety of flavors make food and beverages even tastier. Consumers are increasingly paying attention to products with natural flavors.

Scientists from the University of Giessen have successfully identified an enzyme for the synthesis of aromatic compounds with methylated hydroxy and/or thiol groups in the edible fungus *Pleurotus sapidus* and developed a biotechnological process for natural flavor synthesis.

The process is highly scalable, resource efficient and has a broad substrate spectrum.



Vanillin



p-Anisaldehyd



2-Methyl-3-(methylthio)furan

SYNTHESIS EXAMPLES

p-Anisaldehyde (Odor: coumarin, anise, vanilla)
Taste: sweet, spice anise, almond-like, creamy, nutty
Use: *Baked goods, dairy products, confectionery, beverages (alcoholic & non-alcoholic)*

2-Methyl-3-(methylthio)furan (Odor: sulfurous, meaty)
Taste: meaty
Use: *meat/fish products, spices, soups, flavoring of meat alternatives, sauces*

AT A GLANCE ...

Application Fields

- Food biotech
- Beverage and food processing
- Vegetarian/ vegan food
- Cosmetics & body care
- Household Items

Business

- Flavor and fragrance industry
- Food and beverage manufacturers

USP

- Synthesis of natural flavors
- Broad substrate spectrum
- Reduction of toxic environmental pollution
- Principles of Green Chemistry

Development Status

- Proven synthesis of different flavorings in the laboratory

Patent status

Priority applications filed on 07.04.2022 with the European Patent Office.

ADVANTAGES OVER THE PRIOR ART

- Synthesis of flavoring substances of natural origin
- Substrate spectrum covering several substance classes
- Compliance with the *principles of green chemistry**
- Scalability

*By using enzymes, the ***principles of green chemistry*** are met. These include waste reduction, energy efficiency, less environmentally harmful syntheses, nuclear economy and the use of renewable raw materials.

STATE OF PRODUCT DEVELOPMENT

- Proven synthesis of different flavorings in the laboratory
- *Technology Readiness Level 3 (Proof of Concept)*
- Samples can be provided

MARKET POTENTIAL

Many people associate natural products with food quality and safety. An increasing number of consumers want to reduce or avoid artificial flavorings in their diet.

In 2021, the global market volume for flavors and fragrances was 37.5 billion US dollars. Forecasts predict strong growth rates for the food and beverage industry.

Consumers are also showing great interest in sustainable production and natural ingredients for cosmetics, personal care, pharmaceuticals and household products.

The market for meat alternatives has also been growing for years. According to Statista, global sales of vegan meat products are forecast to triple by 2035.

COOPERATION OPPORTUNITIES

On behalf of Justus-Liebig-University Giessen, TransMIT GmbH is looking for cooperation partners or licensees worldwide.

Funding projects to implement industrial application are also possible.

A TECHNOLOGY OF



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