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Commentary

Biotechnological Approach for Production of Aroma Compounds

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DESCRIPTION

Natural additives are a possible alternative for the replacement of traditional chemicals, and are extensively employed within the food technology, cosmetic and pharmaceutical industry. In the last few years, many chemical companies have increased their portfolios with the inclusion of naturally- obtained compounds, through biotechnology-based approaches so as to substitute chemical synthesis. During this context, a joint effort between science and industry for the assembly of natural additives is prime for the event of appropriate solutions so as to satisfy the demand for natural compounds. Odoriferous compounds, otherwise referred to as aromas, have low molecular weight; generally but 400 Da and are organic compounds that are remarkably perceptible by smell and exert characteristic odors that are often pleasant. They'll be classified as hydrocarbons, aldehydes, alcohols, acids, ketones, esters and lactones, as an example, limonene, α-pinene, and β-pinene are among the foremost widespread monoterpene hydrocarbons. A consolidated biotechnological approach comprising the assembly of aromatic compounds is also accomplished using the biotransformation of monoterpenes has been described. During recent years, there has been increasing efforts on a part of industries to adapt their processes and products to recent global tendencies. These efforts have involved efforts to seek out alternatives to chemical oxidation bioprocesses for obtaining aroma compounds and include methods like the direct extraction from nature, chemical synthesis and biotechnological transformations *via* microbial and enzymatic biotransformation. Compared to chemical synthesis and direct extraction from nature, biotransformation processes are attractive and may be wont to identify pathways for production of value-added compounds. The products obtained through this approach will be considered to be natural, and associated with the concept of sustainable development, since such production processes are aligned with the simplest practices in environmental preservation. This biotechnology process may be defined because the use of biological systems to catalyze chemical changes in substances that don't constitute their common precursor (substrate). These allow the catalytic activity of those systems to act on the substrate and produce new oxygenated derivatives. The main steps within the biotransformation are the choice of biocatalyst systems, which is principally resistant and might use the precursor because the only carbon source. An enormous number of biotechnological processes using whole-cell or isolated enzyme in biotransformation of monoterpenes are published using growth in appropriate media and might generate a combination of intermediate products. Whole-cell biotransformation has the potential of being more environmentally benign than chemical synthesis and cheaper when put next to isolated enzyme catalysis. Among all the present whole-cells systems, the use of fungi has traditionally been most utilized in biotransformation processes. Among the foremost targeted substrates that have potential to be used for fungal biotransformation approaches are limonene and pinene, since they will result in the buildup of intermediate products with high added value. These products may have a value that's 10 to 30 times more than the initial substrate. Limonene contains a weighted average price of US$ 34/L, while its oxygenated counterparts, for instance, carveol, perillyl alcohol, and carvone present reference prices of US$ 529/L, US$ 405/L, and US$ 350/L, respectively. While α-pinene has a mean price of US$ 64/L, oxygenated derivatives, such myrtenol have reference prices of US$ 1,939, verbenol (US$ 1,926/L), myrtenal (US$ 913/L) and verbenone (US$ 906/L). Therefore, there's a crucial economic opportunity to be explored within the addition of value to commodities.

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