Biocatalyst to transform fat into stabilizers, coatings, glues and polymers in a specific and environmentally friendly way

The CSIC has developed two mutated variants of an unspecific peroxygenase enzyme that improve the selectivity of the biocatalyst for two specific industrial applications. One is the epoxidation of unsaturated fatty acids for use as stabilizers, coatings, or crosslinking agents for adhesives and glues. The other is the hydroxylation of fatty acids, which can lead to easily polymerizable diacids for the production of nylon, polyesters, polyamides, or fragrances.

Companies interested in licensing the patent for the development of epoxides, hydroxy compounds, or diacids derived from fatty acid through the use of improved variants of the unspecific enzyme are sought.

An offer for Patent Licensing

This project hast received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 792063.

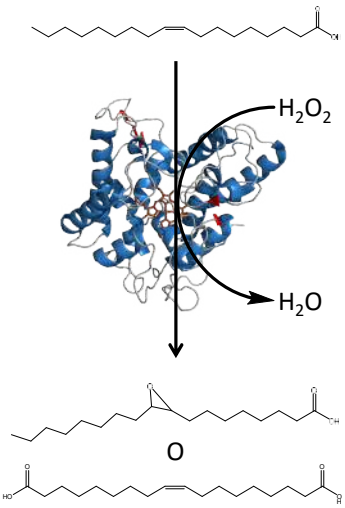
Enzymes designed for the selective production of oxygenated compounds of interest to the industry

The introduction of oxygen atoms into organic compounds by chemical catalysis is a reaction of industrial interest, despite the fact that a multitude of by-products are generated and requires other catalysts.

In this sense, unspecific peroxygenase enzymes catalyze the selective oxygenation of a multitude of chemical compounds under conditions of moderate temperatures and in the absence of other catalysts, only requiring the presence of hydrogen peroxide in an aqueous medium.

The variants created by the CSIC are more selective than the original enzyme for the epoxidation or hydroxylation (or carboxylation) of fatty acids and only give rise to the compound of interest and water as final products.

They are an advantage over traditional chemical catalysis methods, since they are less selective, require high temperatures and contaminating chemical catalysts.



Selective catalysis of fatty acids in epoxides or hydroxylated / carboxylated compounds by improved variants of a non-specific

Main innovations and advantages

- Biocatalyst that selectively produces epoxides from fatty acids in an environmentally friendly way.
- It is a method of producing epoxides with fewer by-products than the chemical catalysis currently used.
- Biocatalyst that selectively hydroxylates or carboxylates fatty acids in terminal or subterminal position.
- It is a method of hydroxylation of fatty acids under environmentally friendly conditions.
- They are two ecological methods, for the production of polymers and adhesives of renewable origin through the use of improved natural enzymes.

Patent Status

PCT

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