



## Enzymatic synthesis esters of benzyl alcohol

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### Abstract

Fragrances have been widely used in the production of perfumes and cosmetics, detergents, household chemicals and food products. Recently, the use of bionanocatalysts – enzymes is a very promising option for the production of aromatic compounds. The introduction of bionanocatalysis in practice reduces the damage caused to the environment by modern chemical technology, and leads to savings in resources and energy. In addition, due to high catalytic activity and exceptional substrate specificity a usage of enzymes can lead to an increase in the economic efficiency of the production of aromatic substances.

The most extensive group of fragrances include esters.

Benzyl capronate belongs to the group of esters that have a smell reminiscent of the aroma of jasmine. Benzil laurate is an ester that has a weak fatty fruit odor. Both of these esters are widely used in the creation of perfume compositions, as flavoring food additives, as well as in the creation of cosmetics. This study shows the possibility of synthesis of benzyl capronate and benzyl laurate using the lipolytic enzyme preparation Lipozyme TL IM. Lipozyme TL IM is a lipase derived from *Thermomyces lanuginosa* and immobilized on silicon dioxide granules.

It is shown that a high yield of target products using the enzyme preparation Lipozyme TL IM can be obtained already during the reaction within 1-2 hours. A number of process parameters allowing to obtain the esters benzyl capronate and benzyl laurate with a yield of more than 85% have been established.

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