

PROCESS OF FAT MIXTURES

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Recently, the problem of quality and safety of food products has become particularly acute in the food industry of Ukraine. Already today, in order to avoid the appearance of industrial trans isomers of fatty acids, the following methods of fat modification, such as fractionation, transesterification, blending and full hydrogenation, have been implemented at the enterprises of the oil and fat industry.

Transesterification of oils and fats is a catalytic process of exchange of fatty acid radicals (acyl groups) between/or within ester groups of triacylglycerols. The distribution of fatty acids in triacylglycerols changes, but the fatty acid composition remains the same. Transesterification is the most promising method of obtaining fat compositions without trans isomers of fatty acids. Today, there is no doubt about the need for wide implementation of the fat transesterification process, because it can be explained by a number of reasons. Firstly, the plasticity of the fat base increases dramatically during transesterification of fat mixtures. Secondly, transesterified fats are easily deodorized and do not show a reversion of the taste and smell of the original fats even during long enough storage. In addition, products containing these fats are resistant to oxidative damage and do not change their structural and mechanical characteristics during storage for a long time. A distinction is made between chemical and biocatalytic transesterification. Biocatalytic transesterification is carried out using enzymes. The use of enzymatic processes eliminates the disadvantages of the traditional chemical method, including the problems of using the catalyst - sodium methyleate [1].

The aim of the study was to improve the biocatalytic transesterification of fat systems using the immobilized enzyme preparation *Lipozyme TL IM*, which is a granular preparation of microbial 1,3-specific lipase from *Thermomyces Lanuginosus*, immobilized on silica gel. The work solves the problem of activating the enzyme preparation by means of moistening with an aqueous solution of sodium bicarbonate with a pH of 7.4...7.7 (3 % by weight). The obtained results make it possible to minimize the duration of the transesterification process while simultaneously obtaining a high-quality product. The proposed processing of the enzyme preparation allows to reduce the duration of the process of biocatalytic transesterification in a model fat mixture (palm stearin, coconut and soybean oils in a ratio of 1 : 1 : 1, respectively) to 3.5...3.7 hours [2]. The obtained results will be the basis for improving the technological process of transesterification of fats.

References:

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