

ABSTRACT

The use of *Galactomyces geotrichum* mold to obtain aroma compositions from buttermilk and whey. Characterization of odor active compounds based on the sensomic approach.

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Changes in consumers' eating habits and preferences, combined with significant technological progress and shortening of food production processes, shape the growing demand for food flavorings. These food additives are designed to provide a sufficiently intense aroma to processed food products. It is particularly important to develop new technologies for the production of natural flavors that respond to the current needs of consumers. Among the technologies for obtaining natural aroma compounds, special attention should be paid to biotechnological processes. They are distinguished by high efficiency, the possibility of using industrial by-products, independence from climatic and sociopolitical factors, and relatively low costs. An example of a microorganism with a high aroma potential is *G. geotrichum*, responsible for the honey-rose aroma of traditionally obtained fried cottage cheese. Therefore, the aim of the study performed in my doctoral dissertation was to develop the parameters of the biotechnological process for obtaining aroma compositions from buttermilk and sweet and sour whey using the *G. geotrichum* mold and to characterize aroma-active compounds formed in the fermentation process. The research carried out included the analysis of 39 strains of *G. geotrichum* in terms of the potential for the production of compounds with a honey-rose aroma, optimization of culture conditions on media with buttermilk and whey, and detailed characteristics of aroma compositions produced on media with buttermilk and whey using the sensomic approach.

The conducted research allowed to obtain basic knowledge about the influence of culture conditions, such as pH, temperature, and the influence of the type of carbon source in the form of disaccharides or monosaccharides, such as: sucrose, lactose, glucose,

galactose and fructose, on the biosynthesis of odorous compounds by *G. geotrichum* molds on media containing buttermilk or whey. In addition, it was observed that the simultaneous fermentation of sour whey with the addition of LAB and the mold *G. geotrichum* resulted in the enrichment of the odor profile with a particular increase in the intensity of the buttery aroma. The results of the conducted research provide basic knowledge about the aroma produced by *G. geotrichum* on substrates using by-products of the dairy industry and the possibilities of its intensification. The obtained aroma compositions give the opportunity to improve the aroma of food products not only in the dairy industry, but also in the confectionery, baking and brewing industries.

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