Applications of microbial lipids isolated from oleaginous microorganisms: a comparative review

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Abstract

Microorganisms, such as yeasts, fungi, algae, and bacteria, have the ability to produce and accumulate a variety of different lipids under different cultivation conditions. These microbial lipids contain high amounts of polyunsaturated fatty acids (PUFAs) comprising of omega-3 and omega-6 classes, which are vital for numerous bodily functions, growth and development. The human body is unable to synthesize these essential fatty acids, therefore, they must be obtained from the diet. Seafood and fish are the common and classical sources of PUFAs; however, microbial lipids also represent a promising source. These valuable compounds have applications in the cosmetic, food, and pharmaceutical industries. This paper reviews the critical factors associated with the use of various oleaginous microorganisms for lipid production and their application in industrial pharmaceuticals and nutraceutical products. In addition, the review provides a comparative description of the fatty acid profiles of various beneficial microorganisms, and their production processes. This review will be beneficial for further research, as well as for manufacturers and industries to select and work with various oleaginous microorganisms to obtain desired products based on lipid profiles and production processes.

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