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USE OF ULTRASOUND TO IMPROVE ENZYME PERFORMANCE

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Enzymes are able to bind to one or more substrates, according to their specificity, converting them into a specific product. The enzymatic reaction is widely used by the food industry to obtain compounds for commercial application. These compounds can be added as ingredients in various food products to increase the stability and improve the sensory characteristics of these foods. Enzymatic hydrolysis has advantages when compared to conventional procedures, such as chemical hydrolysis, due to its high specificity and low of toxicity. However, this process demands a high enzymatic cost and low yield, which drives the search for alternatives to reduce these limitations. In this context, the use of emerging technologies, such as ultrasound (US), has been studied with the aim of improving enzymatic performance. US is considered an environmentally safe and economically viable technology. Its application can occur in the pre-treatment of the substrate or enzyme, as well as in the US-assisted enzymatic reaction. Through acoustic cavitation, US can promote structural changes in the substrate, making it more accessible to hydrolysis, or even promote enzymatic activation and stabilization. Furthermore, the US-assisted reaction can be accelerated due to increased mass transfer during the process. Therefore, the use of ultrasound to improve enzymatic performance can be a promising strategy to optimize these reactions of industrial interest.

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