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USE OF ULTRASOUND TO ENHANCE MILK FERMENTATION

The lactic fermentation of milk is an interesting alternative to obtain differentiated dairy products. In this process, lactose is fermented by lactic acid bacteria (LAB), producing compounds that improve sensory characteristics and prolong the shelf life of fermented milk. According to the legislation, fermented milk includes yogurt, acidophilus milk, fermented or cultured milk, kefir, kumys, curd, among others. Fermented milk gained great prominence due to its diverse qualities such as simple manufacturing technology and mainly due to the promising health benefits. Despite its qualities, lactic fermentation is a high time-consuming and resource-intensive process. Furthermore, product quality problems such as syneresis and low consistency gels are common in fermented milks. In this context, the application of emerging technologies such as ultrasound (US) becomes an interesting alternative to minimize these challenges. Several studies show that the US can improve the metabolic activity of microorganisms during fermentation by releasing β -galactosidase with increased lactose hydrolysis and cause changes in the permeability of the microbial cell membrane, increasing mass transfer, making nutrients available for microbial growth. In addition, the US can promote changes in milk components, such as a decrease in the fat globules size and partial denaturation of whey proteins. Consequently, these changes may decrease the fermentation time, increase the water retention capacity in the protein network and reduce syneresis, improving the final product quality. In this sense, US has the potential to increase the fermentation rate and product quality. However, the conditions of the US process must be optimized and analyzes of cost, availability, scalability and operation on an industrial scale must be evaluated.

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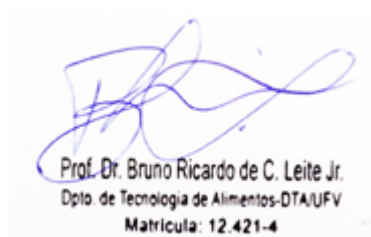
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