

## THE ABILITY OF LACTIC ACID BACTERIA TO PRODUCE BIOSURFACTANTS

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Biosurfactants are compounds constituted by byproducts from the microbial metabolism. These compounds play an important role in decreasing the superficial tension, and they are also associated with functional properties such as emulsification, separation, and solubilization of compounds that are used in agriculture, food industry, paper, metal, textiles, pharmaceuticals, and mainly in oil industry. Thus, the interest in biosurfactants is ever increasing since they show advantages in comparison to chemical surfactants such as higher efficiency in superficial tension reduction rate, low toxicity, biodegradability, thermal stability, and extreme pH values. On the other hand, biosurfactants are not able to compete economically with other synthetic surfactants because of its high production cost. Therefore, carbon alternative sources have been researched. Thereby, the aim of this study is to evaluate the ability of lactic acid bacteria to produce biosurfactants by using dairy industry waste such as whey. To achieve this goal, it was used ten lactic acid bacterial strains of the following genus: *Weissella*, *Lactobacillus*, and *Leuconostoc*. The bacteria were grown in whey for 72 hours at 37°C while stirring. Then, the cells were separated from the supernatant, washed twice with water, solubilized in phosphate buffer solution, and lyophilized. The separated supernatant was also lyophilized for the tests. The lyophilized content was solubilized in water, and the biosurfactant analysis was evaluated by tensiometer. When comparing the superficial tension of the water (72 mN/m), all bacteria decreased superficial tension, with values ranging from 43 to 51s mN/m. These results indicate that biosurfactants were produced by all lactic bacteria, and 4 strains from the *Lactobacillus* genus are highlighted as best producers. This study indicated that whey was a good source to be used as a culture medium to grow and produce biosurfactants by lactic acid bacteria. It has also given a base to proceed with new tests, which will try to optimize the compound production using the best producer strains.

**Keywords:** biosurfactants, lactic acid bacteria, whey

**Acknowledgments:** FAPEMIG, CNPq, UFSJ