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Differences between fermented and unfermented bifido milk: Technological approach changes the bioactive molecules release

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Abstract

Regarding the benefits of functional foods, dairy products are known, beyond its nutritional properties, to contain some biogenic compounds, as bioactive peptides or fat acids. These compounds produced by probiotic bacteria, as *Bifidobacteria*, were shown to be a possible mechanism for their health enhancing properties.

The aim of this study was to analyze and compare the probiotic bioactive metabolites release in fermented or unfermented bifido milk using the same matrix, same probiotic strain Howaru HN019 and same probiotic dose in $CFU.mL^{-1}$. Two technological processes were employed using skim milk UHT: (i) Fermented bifido milk (FBM), the fermentation was conducted at 37°C until milk reach pH 4.7 controlled by CINAC system until pH 4.7 - and (ii) Unfermented bifido milk (UFBM), the probiotic culture was inoculated in skimmed milk and the product was stored in refrigerator at 4°C.

Employing different technologies, the distribution of fatty acids in the products was slightly affected. Besides that, fermentation could bio transform some FA in bioactive compounds as shown in the little increase observed in linoleic acid and conjugated linoleic acid. Although, it was noted a little increase in monounsaturated fatty acids and saturated fatty acids in fermented product and slight higher contents of polyunsaturated fatty acids in unfermented products, carbon chain length was not significantly affected by fermentation in bifido milks. Little is known about peptides formed by bifido fermentation, the present study shows that, control milk and unfermented bifido milk showed the same peptides even after 7 days of storage. Fermentation of milk by *B. lactis* HN019 increased bioactive peptides. These data might suggest that opioids, either as agonists, antagonists peptides are formed due to fermentation process, increasing the source of bioactive peptides. Finally, some storage modified peptides and the increased antibacterial activity.

Biography

Cristina Stewart Bittencourt Bogsan, professor of Food Technology, Department of Biochemical Pharmaceutical Technology, Faculty of Pharmaceutical Sciences, University of São Paulo and researcher from TecLaFA – Technology of Dairy Functional Food and Analogues Lab - has graduated at Pharmacy and Biochemistry from Universidade Paulista in 1999, obtained her master degree at Immunology and Microbiology from Universidade Federal de São Paulo in 2002 and has completed her PhD from Universidade de São Paulo in 2012. She has experience in Science and Food Technology, Microbiology and Immunology, focusing on Immunology and in Science and Technology of the Food, for the most part on Science and Technology of the Dairy Functional Food, acting on the following subjects: Fermented milk, matrix-probiotic-mucosa interaction, *Bifidobcaterium animalis* subsp. *lactis,* B-1 cells, immune stimulation and inflammation.