



Determination of fucosidase activity on different lactobacilli strains

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Keywords: α -fucosidase, fucosyl-oligosaccharides, *Lactobacillus*.

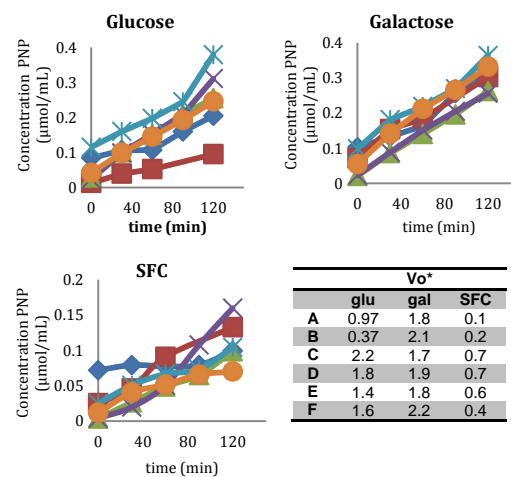
Introduction. Lactic acid bacteria (LAB) is a heterogeneous group of microorganisms that produce lactic acid as fermentation product. LAB are found in fermented foods, drinks, silage, intestinal tract and human genital, they have also been isolated from human milk¹. There are approximately 20 genera of BAL; the genus *Lactobacillus* has been widely studied for its potential as a probiotic and its application in the food industry². Recently it has been studied the consumption of fucosyl-oligosaccharides by *L. casei* BL23 and it was found that is able to grow in the presence of 3-fucosyl-glucosamine as a sole carbon source, releasing L-fucose and metabolizing only N-acetilglucosamina³. Our interest in the study of the metabolism of carbohydrates in lactobacilli focuses on the subsequent search for enzymes associated with the consumption of fucosyl-oligosaccharides.

The aim of this study was to identify strains of *Lactobacillus* which were able to produce α -fucosidase to be used for the synthesis of fucosyl-oligosaccharides.

Methods. Six strains of lactobacilli were used: *Lb casei* IMAU60214 (A), *Lb casei* Shirota (B), *Lb rhamnosus* GG (C), *Lb rhamnosus* KLDS (D), *Lb helveticus* IMAU70129 (E), *Lb delbrueckii* sp. bulgaricus NCFB-2772 (F). Culture medium contained 1% of different carbon sources: D-glucose, D-galactose. Control medium was evaluated without carbon source (SFC). The fermentations were carried out for 24 h at 37 °C, subsequently samples were centrifuged and fucosidase activity was determined in both fractions using a solution of 4-nitrophenyl-fucopiranoside 3.5 mM prepared in phosphate buffer 0.1M (pH7).

Results. As it can be seen in figure 1, the six studied strains showed intracellular activity of fucosidase in the three culture medium evaluated. This indicates that the lactic acid bacteria studied produced constitutively this enzyme. Moreover, there was not extracellular fucosidase in the fermentation

media. These results coincide with those reported by Rodriguez-Diaz (2011).



A: *Lb casei* IMAU60214 (◐); B: *Lb casei* Shirota (◑); C: *Lb rhamnosus* GG (◒); D: *Lb rhamnosus* KLDS (◔); E: *Lb helveticus* IMAU70129 (◕); F: *Lb delbrueckii* sp. bulgaricus NCFB-2772 (◖); glu: glucosa; gal: galactosa; Vo: Velocidad inicial ($\mu\text{mol/mL}\cdot\text{min}$) $\cdot 10^{-3}$

Figure 1. Fucosidase activity intracellular of six strains of lactobacilli grown in media with different carbon sources.

Conclusions. The six strains of lactobacilli studied produced fucosidase intracellularly which will be used to synthesize fucosyl-oligosaccharides similar to those found in human milk.

Acknowledgements. This project (No. 180438) is funded by CONACyT

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