

TITLE: PROBIOTIC STRAINS GROWTH IN DIFFERENT CARBON SOURCES (GLUCOSE, YACON SYRUP AND FOS)

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ABSTRACT:

Bifidobacterium animalis (BB-12), *Lactobacillus acidophilus* (Lbaci) and *Lactobacillus plantarum* (SP-1) are commonly probiotic microorganisms used by the food industry. These strains may have their growth stimulated by the fermentation of prebiotic sources, like fructooligosaccharides (FOS), being yacon considered as a promising source of these compounds. Recently, Embrapa Agroindústria Tropical developed a yacon syrup which contains high levels of FOS. The aim of this work was to study the influence of conventional and FOS carbon sources on growth of three probiotic strains. Commercial probiotic strains - *Bifidobacterium animalis* BB-12® (Christian Hansen), *Lactobacillus acidophilus* Howaru® Dophilus (Danisco) and *Lactobacillus plantarum* Lyofast SP-1 (Sacco) - were cultivated in a basal medium (10g/L of tryptone, 8g/L of meat extract, 4g/L of yeast extract, 2g/L of dipotassium hydrogen phosphate, 1g/L of tween 80, 5g/L of sodium acetate, 2g/L of ammonium citrate tribasic, 0,2g/L of magnesium sulfate, 0.04 g/L of manganese sulfate) supplemented with the carbon source of interest (2% of glucose or 1% of FOS from yacon syrup or 1% of commercial FOS), at 37°C for 48 hours. Growth curves were monitored by enumeration of viable cells at 0, 10, 24 and 48 hours. When glucose was the carbon source Lbaci and SP1 reached the maximum growth in 10 hours, remaining viable until the end of the experiment. A similar behavior was observed with the same cells in commercial FOS. However both glucose and FOS did not appear to positively influence the growth of BB12, since its increase was so slow that no changes in log cycle were observed over 48 hours. When yacon syrup was used a growth increase was observed for all cells. Lbaci and SP1 enhanced in two log cycles in the first 10 hours and remained viable at approximately 10⁹ CFU/mL during 48 hours. BB12 increases only one log cycle in the first 10 hours. Yacon syrup showed to be the carbon source that best influenced the probiotics growth. However, a new set of experiments should be carried out to confirm yacon syrup potential for the production of functional foods, measuring the production of beneficial compounds for health, like short chain fatty acids, by these probiotics.

Keywords: *Bifidobacterium*, *Lactobacillus*, functional food

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