Title: INFLUENCE OF LINOLEIC ACID ON THE GROWTH OF *LACTOBACILLUS* STRAINS

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Abstract:

Fatty acids are essential nutrients for many lactic acid bacteria (LAB). Supplementation of growth medium with fatty acids can influence the membrane composition and growth rate. However, the fatty acids had bacteriostatic, bactericidal, or no effect depending on bacterial strain, fatty acid concentration, fatty acid type, and growth medium. Homeostasis of the intestinal microbiota may prevent inflammatory and infectious diseases in the gut. Linoleic acid has antimicrobial activity which may inhibit the action of probiotics. In this study were evaluated the influence of various concentrations of linoleic acid on the growth of lactobacilli. Ten *Lactobacillus* strains isolated from kefir grains were cultivated in MRS broth added to linoleic acid (0.5, 0.25 and 0.125%) and control cultures were prepared without linoleic acid. All cultures were incubated at 30ºC for 72 hours. The growth was accompanied by viable cells count (CFU/mL) seeded onto MRS agar after 12, 24, 48 and 72 hours. Lag phase lasted up to 12 hours depending on which strain was evaluated. *Lactobacillus* LFBM 01, 05, 06 and 11 showed a higher sensitivity to linoleic acid, observed by the inhibition of bacterial growth. *Lactobacillus* LFBM 02, 04, 07 and 08 strains showed to be indifferent to the presence of linoleic acid concentrations ($p < 0.05$). *L. rhamnosus* ATCC 9595 showed the highest growth rate (0.2 ± 0.01 h^{-1}) compared with the other strains (LFBM 01, 02, 04, 05, 06, 07, 08, 09, 11). For other lactobacilli, this rate varied between $0.15 \pm 0.00 \pm 0.17$ h^{-1} and 0.00 h^{-1}. *Lactobacillus* LFBM 02, 04, 07, 08 and 09 strains showed a high growth rate in MRS supplement with linoleic acid. In this work, it was observed that MRS supplemented with linoleic acid does not influence the growth of most of the *Lactobacillus* strains evaluated.

Key words: Lactobacilli, linoleic acid, microbial growth

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