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314 - STUDY OF THE INTERACTION BETWEEN PROBIOTICS, LIPID METABOLISM, AND MICROBIOTA IN POSPRANDIAL STATES

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Resumen

Introduction: Gut microbiota plays a key role in metabolic regulation and diseases such as obesity and insulin resistance. This study evaluates the effects of Lactobacillus supplementation on serum metabolites, inflammation, and gut microbiota composition during postprandial states following fat overload.

Methods: Fifty participants (28 with obesity, 22 without obesity) receive either Lactobacillus delbrueckii subsp. bulgaricus LB-14 strain (probiotic group) or placebo for 2 months respectively. Oral fat overload tests were conducted pre- (T0) and post-treatment (T2). Fasting and postprandial serum samples were analysed via nuclear magnetic resonance (NMR) for metabolites related to inflammation, lipid metabolism, and gut microbiota activity. Microbiota composition was assessed through DNA sequencing for relative abundance.

Results: Probiotic supplementation reduced inflammatory markers (GlycA, GlycB, GlycF) and insulin levels. Fat overload increased hydroxybutyrate (microbiota-derived) and reduced lactate levels, with hydroxybutyrate increases more pronounced in the probiotic group at T2. Probiotic treatment altered microbiota composition, increasing Bacteroidota and reducing Proteobacteria abundance. Notably, *Bacteroides finegoldii*, associated with elevated LDL and IL-6, was reduced in the probiotic group, while *Coprococcus eutactus*, linked to lower leptin and zonulin levels, increased. Alpha-diversity decreased in the probiotic group but increased with placebo.

Conclusions: *Lactobacillus* supplementation significantly modulates lipid metabolism, inflammation, and microbiota composition, particularly during postprandial states. These findings suggest a potential therapeutic role for probiotics in managing metabolic health.

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