Synbiotic Lactobacillus acidophilus NCFM and cellobiose does not affect human gut bacterial diversity but increases abundance of lactobacilli, bifidobacteria and branched-chain fatty acids: a randomized, double-blinded cross-over trial

Probiotics, prebiotics, and combinations thereof, that is synbiotics, have been reported to modulate gut microbiota of humans. In this study, effects of a novel synbiotic on the composition and metabolic activity of human gut microbiota were investigated. Healthy volunteers (n=18) were enrolled in a double-blinded, randomized, and placebo-controlled cross-over study and received synbiotic [Lactobacillus acidophilus NCFM (10^9CFU) and cellobiose (5g)] or placebo daily for 3 weeks. Fecal samples were collected and lactobacilli numbers were quantified by qPCR. Furthermore, 454 tag-encoded amplicon pyrosequencing was used to monitor the effect of synbiotic on the composition of the microbiota. The synbiotic increased levels of Lactobacillus spp. and relative abundances of the genera Bifidobacterium, Collinsella, and Eubacterium while the genus Dialister was decreased (P...