

## **Orally delivered exopolysaccharide-producing *Bifidobacterium* strains modify the intestinal microbiota dynamic in rats**

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According to the FAO/WHO guidelines, the selection of probiotics for food applications must follow rational criteria that involve the use of both in vitro and in vivo studies. Previously, we have demonstrated that exopolysaccharides (EPS) purified from intestinal bifidobacteria and lactobacilli are able to act as fermentable substrates by the human intestinal microbiota. In a pH-controlled faecal slurry model simulating the human distal colon, we showed that the EPS produced by *Bifidobacterium animalis subsp. lactis* IPLA R1 and *Bifidobacterium longum subsp. longum* IPLA E44 were able to modify the composition and metabolic activity of the microbiota. In the current work, we use an animal model to study the safety of these two EPS-producing strains and their capability to in vivo modulate the microbiota. Animals (24 male Wistar rats) were divided into three groups and daily fed during 24 days with: 100 µl of skimmed-milk (placebo), 109 CFU/day of strain R1 suspended in milk (B1 group) and the strain E44 administered in the same conditions (group B2). At the end of the intervention period, the liver, spleen, mesenteric lymphoid nodes, small intestine and caecum, as well as the caecum-content, were aseptically collected. Results obtained indicated that oral administration of the strains had no effect on bacterial translocation. The quantitative-PCR counts of bifidobacteria were significantly higher in rats fed either with R1 or E44 strains than placebo rats. Additionally, variations in short chain fatty acids content were also detected, suggesting modifications in the dynamic of the rat microbiota.