Interaction of exopolysaccharides produced by *Bifidobacterium* strains with colonocyte-like cellular lines and with primary cultures of peripheral blood leukocytes

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Exopolysaccharides (EPS) are exocellular carbohydrates produced by many lactic acid bacteria (LAB) and other microorganisms present in fermented foods and human environments such as bifidobacteria(1). The synthesis of EPS in the gut ecosystem could confer a selective advantage to the producing bacteria for the survival and colonization of this niche. In fact, it has been proved that bile salts induce the synthesis of EPS by *Bifidobacterium animalis(2)* and bifidobacterial EPS are involved in the adherence to the intestinal mucus(3). Some *Bifidobacterium* EPS are also able to antagonize the activity of bacterial toxins against Caco-2 cells(4) and, in addition, are able to modulate the human intestinal microbiota(5). Thus, EPS are molecules involved in microbe-microbe and microbe-host interactions which could promote benefits for the human health.

In this work, we have studied the adhesion capability of several EPS-producing *B. animalis, B. longum* and *B. pseudocatenulatum* strains to the colonocyte-like cellular lines Caco-2, HT29 and HT29-MTX. The immune modulating activity of the purified polymers was determined by measuring the proliferation and cytokine production of human peripheral blood mononuclear cells (PBMC) cultured with 1 mg/ml of each purified EPS. Results showed that the adhesion capability was strain dependent and, for each strain, it was similar in the three cell lines used. In addition, most purified EPS were able to stimulate the proliferation of PBMC presenting a variable, EPS-dependent, cytokine production pattern. This study suggests that bifidobacterial EPS could favour the transit intestinal colonization of the producing strain and thereby contributing to elicit an immune response.

References:

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