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Lactobacillus rhamnosus* CNCM I-4036 decrease inflammatory cytokine release in human intestinal epithelial cells induced by enterotoxigenic *Escherichia coli

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Intestinal epithelial cells, as important participants in the mucosal immune response, must respond to a variety of stimuli, including commensal and pathogenic bacteria. Interleukin- 8 (IL-8) and Tumor Necrosis Factor alpha (TNF- α) are cytokines produced by macrophages and other cells types such as enterocytes, involved in the mucosal immune response. Probiotic bacteria may provide protection against intestinal damage induced by pathogens, but the underlying mechanisms are still largely unknown. In this study, we investigated whether *Lactobacillus rhamnosus* CNCM I-4036, isolated from exclusively breast-feeding infant feces, protected intestinal Caco-2 cells from the inflammation-associated response induced by enterotoxigenic *Escherichia coli* (ETEC) CECT 501, by modulating cytokine secretion by Caco-2 cells. Caco-2 cells were exposed to ETEC or co-incubated with ETEC and *Lactobacillus rhamnosus* CNCM I-4036 for 4 hours. IL-8 and TNF- α secretion by Caco-2 was measured by immunoassay, with a MILLIplexTMkit using the Luminex 200 system based in the xMap technology. Differences for secreted IL-8 and TNF- α between treated and untreated cells were assessed by the U Mann Whitney test. We found that *Lactobacillus rhamnosus* CNCM I-4036 prevented increased secretion of IL-8 and TNF- α in human intestinal epithelial cell Caco-2 *E. coli* ETEC-induced, which was significantly reduced in 99% and 88% respectively ($p < 0.05$). In conclusion, the beneficial effects of *Lactobacillus rhamnosus* seem to be associated with a decrease in the secretion of IL-8 and TNF- α levels by enterocytes. This strain showed the potential to protect enterocytes from an acute inflammatory response and is a potential candidate for the development of new functional foods helpful in counteracting enteropathogen infections.