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Antibacterial effect of *Lactobacillus casei rhamnosus* (LCR 35) supernatant towards several clinical *Helicobacter pylori* and *Clostridioides difficile* isolates

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Helicobacter pylori is a Gram-negative, spiral-shaped, microaerophilic opportunistic pathogen that colonizes the mucus layer of human gastric epithelium. *H. pylori* is the major causative factor for peptic ulcer, gastric adenocarcinoma, and chronic gastritis in humans. *C. difficile* is a Gram-positive, drumstick-shaped, anaerobic spore forming opportunistic pathogen that colonizes the human colon and produces enterotoxins. *C. difficile* is the causative factor for pseudomembranous colitis, toxic megacolon, perforation of the colon and sepsis. For both, eradication therapy is losing efficiency due to the increasing microbial antibiotic resistance worldwide. Probiotics, in particular *Lactobacillus* strains, have been reported to show antimicrobial properties in vitro. Thus they are emerging as promising tool for the treatment of *H. pylori* and *C. difficile* infections.

The aim of this research is to study the antagonistic activity of *Lactobacillus casei rhamnosus* LCR 35 supernatant components against *H. pylori* and *C. difficile*. The results of our experiments are promising as LCR 35 supernatant drastically reduces cell viability of *H. pylori* and *C. difficile* immediately after exposure. Our study is a first, important step towards the potential application of probiotic lactobacilli in prophylaxis or treatment of *H. pylori* and *C. difficile* infections.