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Viability of bacterial suspensions incubated sequentially in solutions simulating the gastric (pepsin, pH 2, 90 minutes) and intestinal (pancreatin and bovine bile salts, pH 8, 180 minutes) compartments was assessed. According to these results, different strains were selected and adhesion assays to mucin and epithelial cells were performed after simulation of gastrointestinal tract´s passage.

Strains were grouped according to their resistance to gastrointestinal conditions. All *L. kefir* strains showed the same resistance rates to simulated gastric and intestinal fluids, (viable microorganisms decreased 2 logs). In the case of *L. paracasei* strains, CIDCA 8339 was the most resistant (similar to *L. kefir* strains) meanwhile *L. paracasei* CIDCA 83121 and CIDCA 83124 were very sensitive to this treatment, decreasing counting at least 4 logs. For all the bacterial strains under study, the critical step was the incubation in simulated gastric juice.

Regarding adhesion properties, *L. kefir* and *L. paracasei* strains adhered $9.5x10^4$ – $1x10^6$ CFU/cm^2 to mucin ($9x10^7$ CFU/cm^2 were initially inoculated) and 1.5 – 5 CFU/cell to Caco-2/TC-7 cells (100 CFU/cell were initially inoculated) before treatment. Gastrointestinal tract´s passage simulation significantly increased adhesion to mucin of selected strains: *L. kefir* (CIDCA 8348, 83102, 83115 y JCM 5818) and *L. paracasei* (CIDCA 8339, 83123, 83124). However, adhesion capacity to Caco-2/TC-7 cells was increased only for *L. kefir* CIDCA 8348, 83102 and 83115 and *L. paracasei* CIDCA 83123 and 83124.

A greater variability in behavior was observed between *L. paracasei* strains than that of *L. kefir* strains. Simulated gastrointestinal tract´s passage modificated bacterial surface and these modifications changed adhesion rates to mucin and Caco-2/TC-7 cells. Based on these results, we considere that *L. kefir* CIDCA 8348, 83102 and 83115 and *L. paracasei* CIDCA 83123 are excelent candidates for the development of probiotic products.

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EVALUATION OF THE EFFECT OF GLUCOSE AND CARBOXYMETHYLCELLULOSE ON THE ENDOGLUCANASE PRODUCTION BY *Bacillus* spp.

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The production of bioethanol from the abundant and renewable lignocellulosic biomass has risen as a promising approach in the recent years. Cellulose, the most common natural renewable biopolymer, is degraded by the hydrolytic action of a multicomponent enzyme system which represents the key step for such biomass conversion. This enzymatic hydrolysis requires the synergistic action of exoglucanases, endoglucanases and β-glucosidases. As a whole, cellulases contribute the 8% of the worldwide industrial enzyme demands, which are expected to increase by 100% within 2014. As a source of novel cellulases, Bacteria are considered a valuable source of enzymes due to their high growth rate and their diverse repertoire of glycoside hydrolases. Hence, we evaluated a collection of cellulase producing bacteria isolated from guts of phytophagous insects. As a result, two isolates were selected due to their high endoglucanases production. These isolates were named as AR03 and AR408 and taxonomically identified as *Bacillus* spp. by means of the 16S rRNA gene sequences analysis.

A limiting factor in the production of enzymes in our study was the low biomass obtained in mineral media with cellulose as the sole carbon source. Thus, we used a modified peptone broth based on a commercial culture media in order to increase the microbial growth. Then, the media components were evaluated by using a systematic approach through factorial design with the statistical software MINITAB® (14.12.0), in order to assess the most useful conditions for enzyme production.

Once achieved a good bacterial growth, we tested glucose and carboxymethylcellulose (CMC), individually and combined, as substrates for the production of endoglucanases. The enzymatic activity was quantified by determining reducing sugars released with the 3,5-Dinitrosalicylic acid (DNS) reagent.

Despite the fact that the two isolates studied were closely related as *Bacillus* species, they displayed a different behavior. AR03 produced the highest enzymatic activity using CMC (1.15 U/mL), but also showed a significant ability to produce endoglucanases using media with glucose and in the absence of CMC, reaching activities over 0.50 U/mL. On the other hand, AR408 produced endoglucanases only in the presence of CMC in the culture medium.

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