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### **Antioxidant activity of exopolysaccharides produced on different carbon sources by *Lactobacillus plantarum* strains from human origin**

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Several *Lactobacillus plantarum* strains have been recognized due to the beneficial effect that may confer to health of the host. It has been reported that this strains have the ability to produce exopolysaccharides (EPS) which have been studied because of their antioxidant capacity. The aim of this assay was to determine the yield of EPS produced by twelve *Lactobacillus plantarum* strains growth on different carbon sources and to know the antioxidant activity of EPS obtained. The strains were grown in MRS broth with one of three carbon sources (Glucose, Lactose and Galactose). Crude EPS were extracted and quantified by anthrone method. Antioxidant activity for each EPS was determined by 2, 2-diphenyl-1-picrylhydrazyl free radical (DPPH) method, ascorbic acid was used as standard. All assays were performed in triplicate and results were expressed as mean±SD. The yields of EPS obtained in the three carbon sources were 2.17, 1.78 and 1.95 g/l for Glucose, Lactose and Galactose respectively without statistically difference. It means that the carbon source had not influence on the EPS yield. Although the antioxidant activity determined for EPS showed activities in a range from 32.75 to 76.02% being higher for EPS produced in medium with glucose (p=0.000). Antioxidant activity was similar to the ascorbic acid. The obtained results and knowing that the strains were isolated from humans, we could consider that possibly these strains play an important role in counteracting oxidative stress in vivo and their activity will be influenced by the diet of host.

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### **Impact of fruits and quinoa flours on acidification profile, probiotic *in vitro* gastrointestinal tolerance and viability in fermented milk**

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Several ingredients can be added to fermented milk to enhance their nutritional value as well as to stimulate probiotic bacteria growth during storage. Additionally, these ingredients may also enhance probiotics tolerance to gastrointestinal (GI) tract conditions. Therefore, the effect of supplementing fermented milk with fruit flours (apple, banana, grape; 1%) and quinoa flour (1-3%) on the kinetic parameters of acidification, probiotic viability and probiotic resistance to simulated GI conditions was evaluated during 28 days of storage. In addition, the adhesion of probiotics to Caco-2 cells in vitro was also evaluated in the products with quinoa flour. Fermented milk was produced using an ABT culture (*Lactobacillus acidophilus* La-5, *Bifidobacterium animalis* subsp. *lactis* Bb-12 and *Streptococcus thermophilus*). Adding fruit and quinoa flours had no effect on fermentation time and on the counts of probiotics during 28 days of storage. Nonetheless, the supplementation with fruit flours improved La-5 tolerance to simulated GI conditions; however only banana flour had a protective effect on Bb-12. Quinoa flour did not protect the probiotic strains against gastric and enteric juices, nor had a positive effect on the adhesion of probiotic bacteria to Caco-2 cells *in vitro*. In conclusion, although fruit flours showed a protective effect on probiotics tolerance to simulated GI conditions, the addition of up to 3% quinoa flour had a neutral effect. Nevertheless, its incorporation to fermented milk can be recommended because it is an ingredient with considerable nutritional value which may increase the appeal of the product to consumers.

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