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### Effects of *Pediococcus pentosaceus* K6 and *Pediococcus acidilactici* K8 cell-free supernatants on the growth of pathogenic isolates from clinical origin

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#### Abstract

Due to the appealing properties of lactic acid bacteria (LAB), the market for these probiotics as food supplements has grown rapidly. Fermented food products are used to meet the demand.

In this regard, we investigated the probiotic potentials of 42 LAB in artisanal fermented milk. The antagonism activity of the selected LAB was tested against seventeen gram positive and gram negative bacteria involved in various diseases using well-diffusion assay and confirmed by disk diffusion assay after a treatment of the young lactic cultures and the obtaining of cell-free supernatants (CFS). The enteropathogenic strains used as indicator organisms are bacteria that are multidrug resistant to antibiotics (ATBs) that produce beta-lactamase. The reference strains chosen as indicators were: *Listeria monocytogenes* ATCC 7644, *Staphylococcus aureus* ATCC 25293, *Bacillus cereus* ATCC 14578, *Bacillus subtilis* ATCC8, *Enterococcus faecalis* ATCC 19433, *Pseudomonas aeruginosa* ATCC 27853 and *Escherichia coli* ATCC 25422.

From the overall isolated strains, two identified as *Pediococcus pentosaceus* K6 and *Pediococcus acidilactici* K8 showed high antimicrobial activity were selected for further study. The antibacterial molecules were characterized in the following ways: the (CFS) of the two chosen strains were tested for sensitivity to hydrolytic enzymes and heat, as well as stability under different pH values. All of the antibacterial compounds were inactive in the presence of proteinase K, indicating that the inhibitory compounds are protein-based in nature. Treatment of the (CFS) with catalase did not result in any changes in activity, suggesting that the inhibition recorded was not hydrogen peroxide.

These bioactive molecules produced by the two *Pediococcus* spp., can be classified under the category of bacteriocins.

**Keywords:** Antimicrobial activity, Cell-Free supernatants, *Pediococcus* spp., Enteropathogenic bacteria, Bacteriocin.