Evaluation of probiotic properties of lactic acid bacteria isolated from water buffalo mozzarella cheese

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Probiotics need to resist to specific conditions in gastro-intestinal (GI) tract, like the presence of gastric acidity of the stomach and toxicity of bile, to confer health benefits to the host. The evaluation of resistance of LAB to antibiotics is also technologically important because LAB in food and the human GI may act as potential reservoirs of antibiotic resistant genes and can transfer these genes to bacteria present in foods and GI tract. In this research, the in vitro resistance to gastric and enteric simulated conditions and the resistance of LAB strains to antibiotics were investigated. The strains SJR7521, SJR37, SJR55, SJR6542, SRJ5582 and SJR6562 were isolated from water-buffalo mozzarella cheeses stored during 28 days. They presented lactic acid bacteria characteristics (catalase and oxidase negative, Gram-positive, non-spore forming bacteria with coccoïd morphology), and identified as Lactobacillus delbrueckii subsp. bulgaricus, Lactobacillus casei, Leuconostoc mesenteroides, Leuconostoc citreum, Leuconostoc mesenteroides and Leuconostoc mesenteroides, respectively, based on the 16S rRNA gene sequencing. Only strain SJR7521 failed to survive the in vitro GI tract conditions. The other strains survived the GI tract conditions, although reduction on their population was observed (at least 3 log cycles). The LAB remainder population has the potential to reach the intestine and promote the beneficial effects to the consumers. All strains were highly sensitive to several antibiotics. The LAB strains demonstrated potential probiotic properties and also a low risk regarding the presence of resistant genes to antibiotics.