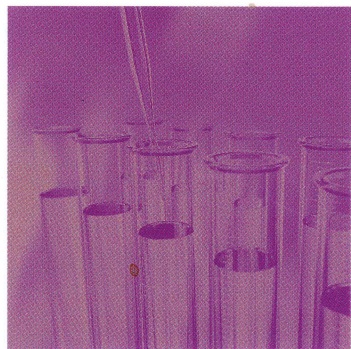
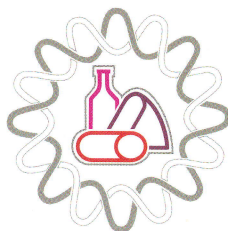


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Antibiotic resistance and probiotics properties of lactic acid bacteria isolated from Andean vegetable and animal products

G. Vignolo¹, E. Pingitore¹, C. Fontana², P.S. Cocconcelli², J. Jimenez¹, C. Plumed-Ferrer³, A. von Wright³, R. Aznar⁴

¹Centro de referencia para Lactobacilos (CERELA) CONICET, Chacabuco 145- Tucuman- Argentina, T4000ILC SAN MIGUEL DE TUCUMAN, Argentina, e-mail: vignolo@cerela.org.ar

²Istituto di Microbiologia-Centro Ricerche Biotecnologiche, Università Cattolica, CREMONA-PIACENZA, Italy

³Institute of Public Health and Clinical Nutrition, University of Eastern Finland, KUOPIO, Finland

⁴Departamento de Microbiología y Ecología, Universitat de València, VALENCIA, Spain

In Andean regions of America, many traditional fermented foods and beverages are produced. Vegetable traditional products involve quinoa and amaranth whose widespread consumption as grains and fermented flours (sourdoughs) has grown recently due to their high nutritional value and lack of gluten. Fermented potatoes (*Tocosh*) have also been produced from ancient times in the Central Andean region of Peru, whereas llama meat fermented sausages are traditionally produced and consumed in Northwestern Argentina. At present, there is great concern that commensal bacterial populations from food and the gastrointestinal tract (GIT) of humans and animals, such as lactic acid bacteria (LAB) can serve as reservoir for antibiotic resistance genes, which can be horizontally transferred to other microorganisms. On these bases, the antibiotic resistance profiles (EFSA-2012) of eighty LAB strains isolated from Andean products were investigated. The analyzed exhibited a general sensitive profile against ampicilline (AMP), vancomycin (VAN), gentamycin (GEN), kanamycin (KAN), streptomycin (STR), erythromycin (ERY), clindamycin (CLI), tetracycline (TET) and chloramphenicol (CHL). Several strains were resistant mainly to the aminoglycosides (KAN, STR and GEN) while a multi-resistant pattern was found particularly among strains isolated from quinoa /amaranth grains and sourdoughs. However, sensitive LAB strains were observed among *Lactobacillus sakei*, *Lb. reuteri*, *Lb. plantarum*, *Lb. casei* and *Leuconostoc mesenteroides*. On the other hand, to select LAB strains with probiotic potential the resistance to stress factors (lysozyme, bile salts and low pH) present in the GIT, surface properties (hydrophobicity, autoaggregation and adhesion to caco-2 cells) and production of antimicrobial compounds were evaluated. Results allowed selecting *Lb. plantarum* (2 strains), *Lb. reuteri* (1) and *Lb. casei* (1) as the best candidates to be used as probiotics.

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The plasmid complement of *Lactococcus lactis* NCDO712

M. Tarazanova¹, R. Siezen², M. Beerthuyzen³, A. de Jong¹, M. Wels³, J. Kok⁴, H. Bachmann³

¹RUG/TIFN/NIZO Food Research, Department of Molecular Genetics, Kernhemseweg 2, 6718 ZB EDE GLD, The Netherlands, e-mail: mariya_tarazanova@hotmail.com

²CMBI, Radboud University Medical Centre Nijmegen, NIJMEGEN, The Netherlands

³NIZO Food Research, EDE GLD, The Netherlands

⁴RUG, GRONINGEN, The Netherlands

The lactic acid bacterium *Lactococcus lactis* NCDO712 was isolated from a dairy starter culture in the 1950s and it is the ancestor of the phageage and plasmid cured model strain MG1363. *L.lactis* NCDO712 was described to contain 5 plasmids (~50 kb, 13.6 kb, 8 kb, 3.8 kb, 2.7 kb) of which so far only two have been sequenced. We here sequenced the complete plasmid complement of strain NCDO712, which resulted in the identification of 6 plasmids (55.4kb, 8.6kb, 3.6kb, 2.1kb, 15.5kb, 51.7kb) - one more than initially described. Next to an extracellular protease gene and the genes necessary for lactose utilization, which are on the already sequenced plasmid pLP712, the other plasmid-encoded genes include those of a variety of IS-located transposases, two restriction modification systems (specificity subunits) and stress related genes. The sequencing of the total DNA of strain NCDO712 also allowed identifying of some chromosomal differences between the strains NCDO712 and MG1363. The characterization of *L. lactis* NCDO712 will help establishing it as a relevant model strain because of its functional proximity to commercially used cultures. In combination with the genetically highly accessible derivative MG1363, it will form a useful couple to study industrially relevant traits of *L. lactis*.