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Characterization of a nisin-like bacteriocin produced by *Lactococcus lactis* 19.3, isolated from raw milk

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Lactococcus lactis 19.3 was isolated from raw milk and identified by 16S rRNA gene sequencing. It produces a bacteriocin with a wide inhibitory spectrum, including other lactic acid bacteria (LAB) and strains of *Bacillus cereus*, *Bacillus subtilis*, *Listeria monocytogenes* and *Staphylococcus aureus*. The bacteriocin has a low molecular mass; it is heat resistant and stable in a wide pH range. In this study, the relation between bacterial growth and bacteriocin production was investigated in various media. Moreover, the mode of action was studied and the corresponding gene was sequenced. The producing strain was able to grow in cow's milk and soy milk and the maximum bacteriocin activity was detected in the early exponential phase, as in MRS medium. The bacteriocin has a bactericidal, concentration and strain dependent effect. When added to concentrated suspensions of the sensitive cells, the bacteriocin caused a rapid decrease of the cells viability and caused major morphological changes as were observed by scanning electron microscopy. Moreover, the bacteriocin was able to completely repress the growth of the sensitive strains when added in a sufficient amount prior or immediately after inoculation. Finally, the bacteriocin was identified by sequencing the encoding gene. The presence of nisin gene was confirmed. The nucleotide sequence and the deduced amino acids sequences were identical to those of nisin A. Based on all our data gathered so far; *L. lactis* 19.3 is a good candidate for a starter or protective culture in the manufacturing of both fermented dairy or vegetarian food products.

Biography

Medana Zamfir has completed her PhD in 2003 and is a Senior Scientist at the Institute of Biology of the Romanian Academy. Her main research topics are: Lactic acid bacteria, food microbiology and biochemistry. Her scientific experience is illustrated by the contribution to many research projects, both national and international. She has more than 50 original papers and many communications presented in national/international conferences.

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