

Antimicrobial Peptide Produced by *Lactococcus garvieae* with a Broad Inhibition Spectrum

Authors : Hai Chi, Ibrahim Mehmeti, Kirill Ovchinnikov, Hogle Holo, Ingolf F. Nes, Dzong B. Diep

Abstract : By using a panel of multiple indicator strains of different bacterial species and genera, we screened a large collection of bacterial isolates (over 1800 isolates) derived from raw milk, for bacteriocin producers with broad inhibition spectra (BIS). Fourteen isolates with BIS were identified, and by 16S rDNA sequencing they were found to belong to *Lactococcus garvieae* (10 isolates) and *Enterococcus faecalis* (4 isolates). Further analysis of the ten *L. garvieae* isolates revealed that they were very similar, if not identical, to each other in metabolic and genetic terms: they had the same fermentation profile on different types of sugars, repetitive sequence-based PCR (rep-PCR) DNA pattern as well as they all had the same inhibition profile towards over 50 isolates of different species. The bacteriocin activity from one of the *L. garvieae* isolates was assessed further. The bacteriocin which was termed garvicin KS, was found to be heatstable and proteinase-labile and its inhibition spectrum contained many distantly related genera of Firmicutes, comprising most lactic acid bacteria (LAB) as well as problematic species of *Bacillus*, *Listeria*, *Streptococcus* and *Staphylococcus* and their antibiotic resistant derivatives (e.g. VRE, MRSA). Taken together, the results indicate that this is a potent bacteriocin from *L. garvieae* and that its very broad inhibition spectrum can be a very useful property for use in food preservation as well as in infection treatments caused by gram-positive pathogens and their antibiotic-derivatives.

Keywords : bacteriocin, lactic acid bacteria, *Lactococcus garvieae*, antibiotics resistance

Conference Title : ICABES 2017 : International Conference on Agricultural, Biological and Ecosystems Sciences

Conference Location : Miami, United States

Conference Dates : March 09-10, 2017