

# Copy Number and Location of Insertion Sequences ISS1 and IS981 in Lactococci and Several Other Lactic Acid Bacterial

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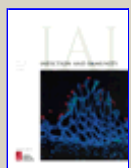
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Genomic DNA from 49 lactococcal strains was screened by Southern hybridization for the presence and relative copy number of lactococcal insertion sequence ISS1: ISS1 was found in 47 of 49 strains giving 1 to 20 hybridizing bands per strain. Southern hybridizations of undigested plasmid DNA from 17 lactococcal strains probed with ISS1 and IS981 showed that ISS1 was present on plasmids in all 17 strains, whereas IS981 was present on plasmids in 14 of the 17 strains. Both insertion sequences were present primarily on larger plasmids (>25 kb), and some plasmids contained copies of both insertion sequences. When probed with ISS1, Southern hybridizations of DNA isolated from *Lactococcus lactis* ssp. *lactis* ML3 frozen stock culture and from isolated colonies showed that the stock culture consisted of a mixture of cells having different ISS1-hybridizing bands, indicating that stock cultures may contain cells with varying locations of ISS1 sequences. The number of copies and their widespread distribution among lactococcal strains establish that insertion sequences will contribute significantly to genotypic and phenotypic events that may affect the industrial performance and stability of lactococcal strains.

Key Words: ISS1 • IS981 • Lactococci • insertion sequences

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