
Abstract
AIMS: To isolate bacteriocin-producing lactic acid bacteria (LAB) with high wide spectrum antibacterial activity and to characterize their inhibitory peptides.

METHOD AND RESULTS:
Seven LAB strains [Lactobacillus casei ssp. rhamnosus (PC5), Lactobacillus delbrueckii ssp. bulgaricus (BB18), Lactococcus lactis ssp. lactis (BCM5, BK15), Enterococcus faecium (MH3), Lactobacillus plantarum (BR12), Lactobacillus casei ssp. casei (BCZ2)], isolated from authentic Bulgarian dairy products were capable of producing bacteriocins, inhibiting the widest range of pathogenic bacteria. The bacteriocins were resistant to heating at 121 degrees C for 15 min, stable at pH 2-10, sensitive to protease, insensitive to alpha-amylase and lipase. Two of bacteriocins produced by Lact. bulgaricus BB18 (bulgaricin BB18) and E. faecium MH3 (enterocin MH3) were purified and the molecular masses were determined. The N-terminal amino acid sequence of bulgaricin BB18 did not show strong homology to other known bacteriocins.

CONCLUSIONS: Lactobacillus bulgaricus BB18 and E. faecium MH3 produce two novel bacteriocins highly similar to the pediocin-like nonlantibiotics.

SIGNIFICANCE AND IMPACT OF THE STUDY: The two bacteriocins are potential antimicrobial agents and, in conjunction with their producers, may have use in applications to contribute a positive effect on the balance of intestinal microflora. Furthermore, bulgaricin BB18 strongly inhibits Helicobacter pylori.