Isolation and preliminary characterization of a bacteriocin produced by Lactobacillus plantarum N014 isolated from nham, a traditional Thai fermented pork.

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Lactobacillus plantarum N014 was isolated from nham, a traditional Thai fermented pork, and exhibited antimicrobial activity against Listeria monocytogenes. Its bacteriocin had a broad inhibitory spectrum toward both gram-positive and gram-negative bacteria. The bacteriocin activity was sensitive to all proteolytic enzymes used in this study, including papain, pepsin, pronase E, proteinase K, and trypsin, but was resistant to the other enzymes, such as alpha-amylase, lipase A, and lysozyme. Furthermore, activity was stable over various heat treatments and pH values. The bacteriocin exerted a bacteriolytic mode of action. It was produced during the exponential growth phase and reached its highest level as producer cells entered the stationary phase. Adsorption of the bacteriocin onto producer cells was pH-dependent. No bacteriocin adsorption was detected at pH 1 to 3, whereas 100% bacteriocin adsorption was found at pH 7. Plasmid isolation revealed that L. plantarum N014 contained no plasmids. From Tricine-sodium dodecyl sulfate-polyacrylamide gel electrophoresis and growth inhibition testing against L. monocytogenes, the estimated molecular mass of L. plantarum N014 bacteriocin was 8 kDa.

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