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Isolation of Bacteriocin from Lactic Acid Bacteria and Analysis of Antimicrobial Activity

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Bacteriocins are antimicrobial peptides or proteins produced by bacteria to inhibit the growth of closely related or competing bacterial species. These naturally occurring compounds play a crucial role in the defense mechanisms of the producing bacteria, offering protection against microbial competition within their ecological niche. This study explores the isolation and characterization of bacteriocins from lactic acid bacteria (LAB) sourced from curd and soil samples, focusing on their potential as natural antimicrobial agents. LAB strains were meticulously isolated using standard microbiological techniques, Gram staining, biochemical tests and selective culturing were performed. The bacteriocin extraction process were done by centrifugation, followed by precipitation and concentration of separated fractions. Both of these fractions were further analyzed to evaluate their antimicrobial potential. The study also investigates various factors influencing the efficiency of bacteriocin production, such as bacterial growth conditions and environmental factors, and highlights their potential role in diverse fields such as food safety, preservation and healthcare, where they could serve as natural preservatives and alternatives to synthetic antibiotics. This study underscores the promising role of LAB-derived bacteriocins in combating microbial resistance and enhancing the sustainability of antimicrobial therapies.

Keywords: Antimicrobial agents, Bacteriocins, Lactic acid bacteria, Natural preservative