Partial characterization of antimicrobial compound produced by Lactobacillus paracasei LA07, a strain isolated from Budu.

ABSTRACT

Aim. The aim of this study was to identify the antimicrobial activity of the compound produced by the lactic acid bacterium, Lactobacillus paracasei LA07, isolated from the fish fermented product (budu). Methods. The activity of crude extract was assessed for its activity against different pathogenic bacteria, different enzymes and chemicals.Results. The inhibitory spectrum when evaluated against a range of Gram-positive and Gram-negative test microorganisms showed that the antimicrobial compound from the isolate inhibited the growth of the indicator microorganisms (Bacillus cereus, Lactococcus lactis, Staphylococcus aureus, Salmonella enterica, Listeria monocytogenes and Escherichia coli. Complete inactivation of antimicrobial activity from Lb. paracasei LA07 was observed for crude extract treated with proteinase K, confirming its proteinaceous nature. Inactivation of the antimicrobial activity was also observed with a-amylase treatment, suggesting that the compound could be glycosylated. From SDS-PAGE analysis, the antimicrobial compound had molecular weight of approximately less than 13.7 kDa. The antimicrobial activity of cell free supernatant was significantly increased with the addition of SDS, Triton x-100, Tween 80 and Tween 20. On the other hand, no change was observed in the antimicrobial activity with the addition of EDTA.Conclusion. It can be concluded that antimicrobial compound showed a proteinaceous nature with a low molecular weight and active against food poisoning bacteria (L. monocytogenes). Thus the compound may have potential use in the food industry.

Keyword: Antimicrobial; Lactobacillus paracasei; Fish fermented product.