

Novel probiotic lactic acid bacteria isolated from indigenous fermented foods from West Sumatera, Indonesia

ABSTRACT

Background and Aim: Probiotics play an important role in maintaining a healthy gut and consequently promote good health. This study aimed to find novel probiotic lactic acid bacteria (LAB) from indigenous fermented foods of West Sumatera, Indonesia. Materials and Methods: This study utilized 10 LAB previously isolated from fermented buffalo milk (dadih), fermented fish (budu), and fermented cassava (tape) which have the ability to produce gamma-aminobutyric acid. The study commenced with the screening of LAB for certain properties, such as resistance to acid and bile salts, adhesion to mucosal surface, and antagonism against enteric pathogens (*Escherichia coli*, *Salmonella Enteritidis*, and *Staphylococcus aureus*). The promising isolates were identified through biochemical and gram staining methods. Results: All isolates in this study were potential novel probiotics. They survived at a pH level of 2.5 for 3 h (55.27-98.18%) and 6 h (50.98-84.91%). Survival in bile at a concentration of 0.3% was 39.90-58.61% and the survival rate was 28.38- 52.11% at a concentration of 0.5%. The inhibitory diameter ranged from 8.75 to 11.54 mm for *E. coli*, 7.02 to 13.42 mm for *S. aureus*, and 12.49 to 19.00 mm for *S. Enteritidis*. All the isolates (84.5-92%) exhibited the ability to adhere to mucosal surfaces. This study revealed that all the isolates were potential probiotics but N16 proved to be superior because it was viable at a pH level of 2 (84.91%) and it had a good survival rate in bile salts assay (55.07%). This isolate was identified as *Lactobacillus* spp., Gram-positive bacilli bacteria, and tested negative in both the catalase and oxidase tests. Conclusion: All the isolates in this study may be used as probiotics, with isolate N16 (*Lactobacillus* spp.) as the most promising novel probiotic for poultry applications based on its ability to inhibit pathogenic bacteria.