Effects of carbon and nitrogen sources on the growth of bacteriocin-like inhibitory substances producing lactic acid bacterium, lactobacillus farciminis ty1

ABSTRACT

Bacteriocins are a heterogeneous group of ribosomally synthesized bioactive bacterial peptides or proteins. Bacteriocins displaying antimicrobial activity against bacterial strains closely or non-related to produced bacteria, but will not harm the bacteria themselves due to the specific immunity proteins. This study aims to enhance the growth of Lactobacillus farciminis TY1 by manipulation of the types and concentrations of carbon and nitrogen sources of the selected culture medium. This bacterium was isolated from fermented food, 'Tempoyak' and has been proven as antimicrobial substances producer and has potential as a probiotic bacterium. Results show that the most favourable media for growth of L. farciminis TY1 was MRS medium with the addition of 20 g/L of sucrose and 30 g/L of yeast extract. This modified MRS medium exhibited higher viable cell count (1.58 x 109 CFU/mL) with faster cell growth (μmax= 0.06 h -1) as compared to commercial MRS media. The findings from this study demonstrate the growth enhancement prospect of L. farciminis TY1 to be applied in the food industry. The data might be beneficial for future formulation of culture medium by using a mathematical approach.