O 274

ANTIMICROBIAL ACTIVITY OF GOAT MILK CASEIN FERMENTED WITH SELECTED LACTIC ACID BACTERIA AGAINST SELECTED PATHOGENS

Z. Hassan*[1], I. M. Elshaafi[1], H. Mohd Noor[1], N. A. Sani[2]

[1)] Universiti Sains Islam Malaysia (USIM), Faculty of Science and Technology, Nilai, Negeri Sembilan, Malaysia
[2)] Universiti Kembangsaan Malaysia (UKM). School of Chemical Science and Food Technology, UKM Bangi, Malaysia

Lactic acid bacteria (LAB) are known to produce compounds with antimicrobial activity. This study evaluated the ability of lactic acid bacteria isolated from different sources (soil and food samples in Malaysia) for their ability to generate goat milk casein (GMS) hydrolysate with antimicrobial activity against selected foodborne pathogens. Lactose concentration in GMC influenced the proteolytic activity of LAB, pH and the antimicrobial activity of the hydrolysates. The antimicrobial activity was evaluated by plate dilution technique and GMS hydrolysates showed inhibitory activity against multi antibiotic resistant pathogens *Cronobacter sakazakii* ATCC 25944, *C. sakazakii* O531G, *C. sakazakii* E4, *Enterobacter* sp., *Staphylococcus aureus* ATCC25923, *Bacillus subtilis* ATCC21332 but not against *Escherichia coli* O157:H7. Higher proteolytic activity of three selected LAB was observed after 48 h fermentationand pH of hydrolysates was around 5.8. Amino acid composition of GMC hydrolysates varied with type of LAB used and the GMS hydrolysates showed high concentration of hydrophilic to hydrophobic amino acids, and high lysine to arginine ratio. The results obtained from this study suggest that fermenting goat milk casein with selected LAB could generate casein hydrolysates with bioactive peptides that can be a source of antimicrobial agent from food sources. The GMC hydrolysate could be added to food such as infant formula to inhibit the growth of pathogens such as *Cronobacter* sp. that has been implicated to be the main cause of neonate's infection from infant formula and powdered milk.

Keywords: Lactic acid bacteria, *Cronobacter sakazakii,* goat milk bioactive peptides, antimicrobial

* Corresponding author: drzaiton@usim.edu.my