

Selection of Biopreservative-produced Lactic Acid Bacteria from Chilled Seafood Products

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ABSTRACT

*In order to reduce usage of chemical preservatives and to maintain nutritional quality of seafood products, this study screened biopreservative-producing, lactic acid bacteria (LAB) from chill-stored seafood products. The viable acid-producing bacteria from chill-stored seafood products, such as shrimp, oysters, crabs, squid and fish, cultured in Bacteriocin screening medium (BSM) were between 3.0×10^5 – 1.4×10^8 and 3.4×10^5 – 2.6×10^7 CFU/g, respectively. Preliminary morphological and biochemical characterization studies revealed that, of the 266 acid-producing bacteria isolated from chilled seafood, 159 isolates belonged to LAB. All LAB were screened for their inhibitory activity against *Staphylococcus aureus* ATCC 29213, *Listeria monocytogenes* ATCC 15313, *Escherichia coli* PSU 95 and *Vibrio parahaemolyticus* PSU 1681 by agar spot test. Among all selected LAB isolates, five isolates showed strong inhibitory activity. Further, in agar well diffusion assay, lyophilized cell free supernatant of four LAB (HYL-20104, POL-20108, FSK-L 5101 and L-SQ-L 25104) inhibited the growth of *Vibrio parahaemolyticus* PSU 1681 and *Listeria monocytogenes* ATCC 15313. Biochemical characterization studies envisaged that the LAB belonged to the genus *Lactobacillus* and *Carnobacterium*. Further, molecular characterization studies confirmed that the potential LAB FSK-L 5101, POL-20108 and HYL-20104 were identified as *Carnobacterium divergens* and L-SQ-L 25104 was identified as *Carnobacterium maltaromaticum*.*

Keywords: Lactic acid bacteria, Bacterial inhibition, Biopreservative, Chill-stored seafood

INTRODUCTION

International trade in fish and seafood products continues to grow, reflecting consumption not only in the European Union and the United States, but in all other regions, including Asia. Thailand has one of the world's largest fish and seafood industries, valued at USD 2.5 billion in 2008 (THAIFEX - World of Food Asia,