THE 2\textsuperscript{nd} INTERNATIONAL SYMPOSIUM AND WORKSHOP ON FUNCTIONAL GENOMICS AND STRUCTURAL BIOLOGY

21\textsuperscript{st} – 24\textsuperscript{th} January 2014

MINES WELLNESS HOTEL, SERI KEMBANGAN MALAYSIA

Editors:
Tan Soon Guan
Ho Chai Ling
Parameswari Namasivayam
Noorjahan Banu Alitheen
Several studies have reported that sub inhibitory concentrations of antibiotics or antimicrobials are capable to modulate bacteria transcription processes. Therefore, the bacteria might have introduced new proteins in mild stress surroundings like in the presence of antimicrobial agents at low concentrations. However, there are limited elucidations about unexpected ability of natural antimicrobial compounds to become a signaling agent capable to induce biological functions in bacteria at low concentrations. Thus, this present study aims to explore the proteins production by Lactobacillus plantarum ATCC 8014 in the presence of Allium sativum at sub-minimal inhibitory concentration (sub-MIC). The Minimum Inhibition Concentration (MIC) of A. sativum against L. plantarum was 33.33% from microdilution assay. L. plantarum cells were treated with A. sativum at sub-MIC (0.05 x MIC) in the fermentation process. Three new protein bands (approximate size of 97.83 kD, 53.56 kD and 46.51 kD) were detected by SDS-PAGE profile for the treated bacteria. LC-MS/MS analysis identified 11 possible proteins from the three protein bands expressed in mild stress condition. The proteins showed antimicrobial activity toward several Gram-positive and Gram-negative bacteria. Hence, L. plantarum ATCC 8014 in mild stress condition with the presence of 0.05 x MIC A. sativum could regulate bioactive proteins production.

Keywords: antimicrobial, transcription, sub-MIC, proteins, Lactobacillus plantarum ATCC 8014, Allium sativum