

ABSTRACT

Six strains of Lactic acid Bacteria were screened for stability of biofilm formation on a designed carrier and, to identify the most stable Bacteriocin producing strain, for up-scale repeated batch fermentation process. Fermentation of 20ml scale, were conducted for, Crystal Violet analysis to identify the two most stable biofilm forming bacteria, *Pediococcus 16AVPd 02*, *Lactobacillus SD1* with absorbance measures OD600 of (0.108 ± 0.006 and 0.085 ± 0.010) of day 7. Preliminary studies were conducted with fermentation upscaled to 500ml, the productivity and anti-microbial activity of both strains, were analyzed. *Pediococcus 16AVPd 02*, has better productivity and % yield of (65.21 ± 4.84 mmol/l and 4.84 ± 0.37 %) comparing to *Lactobacillus SD1* (33.91 ± 9.58 mmol/l and 3.31 ± 0.13 %). Agar Diffusion assay were conducted to identify the best fermentation duration for further Anti-microbial analysis. Finally, repeated batch fermentation of 3L scale were conducted. Analysis were focused on the third day of each batch, *Pediococcus 16AVPd 02* and *Lactobacillus SD1* has productivity and % yield at (26.60 ± 10.68 mmol/l/hr and 2.37 ± 0.46 %, 29.40 ± 5.8 %, 1.85 ± 0.033). Crude sample shows, the highest anti-microbial activity against the indicator pathogen, with SD1 having higher anti-microbial activity comparing to *Pediococcus 16AVPd 02*, from minimal inhibitory concentration test.

Keywords: Lactic acid Bacteria; Carrier; Bacteriocin; Biofilm; Fermentation; *Pediococcus*; *Lactobacillus*

