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Abstract:
The effectiveness of probiotic adaptation in delivering higher benefits effects toward users can be measured by their efficiency during the immobilization process. The immobilization process that combines between probiotic strains and its matrix that act as support system are highly highlighted area as the best combination during immobilization resulting in higher efficiency. In this research, the study was conducted to determine the ability of different microbial volumes (7.5, 12.5, and 18.75 ml) and particle size of fiber (<150, 150–250, and 250–355 µm), in effecting the immobilization efficiency between Lactobacillus plantarum ATCC8014 and palm kernel cake (PKC). The immobilization efficiency and probiotic viability of 96 ±3.21% and 9.47 ±1.00 log CFU/ml, respectively, was obtained by the volume of 12.5 ml. For 7.5 ml and 18.75 ml, the results obtained were 95 ± 4.72%, and 9.26 ± 1.09 log CFU/ml, and 97 ± 0.57%, and 9.34 ± 0.52 log CFU/ml, respectively. Increment of volume used has caused the beads produced to be inconsistent. The particle size of 150–250 µm, with immobilization efficiency and probiotic viability of 99 ± 1.73%, 9.14 ± 0.22 log CFU/ml, respectively. For <150 µm and 250–355 µm, the results obtained were 98 ± 2.31% and 9.09 ± 0.23 log CFU/ml, respectively and 9.10 ± 0.12 log CFU/ml, respectively. High immobilization efficiency range (95–99%) was obtained by the samples. High immobilization efficiency would further impact the application of immobilized microbe in many beneficial purposes and processes.