

ABSTRACT

Izzah Mardhiyyah Nurrohmah. 24020120190125. Antibiofilm Activity of *Pseudomonas sp.* (MB273N) Cell-Free Supernatant against Pathogenic Bacteria (Supervised by Anto Budiharjo and Zarina Amin).

Bacterial biofilms have become serious global health concern as they show resistance against antibiotics as well as the host immune system and are potentially able to cause infections. Therefore, it is necessary to develop effective strategies to control biofilm formation. This study aimed to investigate the potency of the cell-free supernatant (CFS) of *Pseudomonas sp.* (MB273N) as an antibiofilm agent for *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Chromobacterium violaceum*, and to observe the characteristics of bacterial biofilms with and without treatment of *Pseudomonas sp.* (MB273N) CFS. The CFS was prepared by centrifugation of bacterial suspension three times at 11,000 rpm for 15 minutes. A biofilm inhibition assay was performed to assess the antibiofilm activity of CFS at sub-lethal concentration against four tested bacteria and the cell morphologies were then observed under Scanning Electron Microscope (SEM). Data analysis used SPSS version 26. The CFS inhibited biofilm formation, with biofilm inhibition percentages observed at 14.15% for *E. coli*, 32.46% for *P. aeruginosa*, 30.83% for *S. aureus*, and 37.5% for *C. violaceum*. The four bacterial biofilms showed dense cellular aggregates and were multilayered before CFS treatment. After treatment with the CFS, the biofilms exhibited less dense, more dispersed biofilm structures, and alteration in cell morphology. Thus, these findings indicate that *Pseudomonas sp.* (MB273N) CFS exhibit antibiofilm activity against *E. coli*, *P. aeruginosa*, *S. aureus*, and *C. violaceum*.

Keywords: *Antibiofilm, Cell-free supernatant, Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Chromobacterium violaceum*