Profile of Biofilm-Producing Staphylococcus epidermidis from Intravenous Catheter Colonisation at Prof. Dr. Margono Soekarjo Hospital Purwokerto

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First Author	
Last Author	
Authors	Anjarwati, DU; Siswandari, W; Peramiarti, IDSAP;
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Abstract	Staphylococcus epidermidis developed to be a significant human pathogen due to the ability to produce biofilm. The most significant infections of S. epidermidis found in the use of medical devices such as an intravenous catheter. Furthermore, the biofilm is more resistant to antibiotics up to 1000 times more than free-bacteria. This simple survey aimed to describe the profile of biofilm-producing S. epidermidis from intravenous catheter colonisation of some patients in surgical and internal medicine wards at the Margono Soekarjo hospital, Purwokerto, and the antibiotics resistance pattern. A vitek (R) 2 compact (Enseval Medika Prima) was performed to identify the bacterial species and to examine 73 antibiotics for understanding the resistance pattern automatically. The optical density (OD) representing the ability of S. epidermidis to produce biofilms was measured by Microtiter plate biofilm assay with crystal violet staining. A scanning electron microscopy was done to compare the thickness of the ultrastructure of biofilm-producing S. epidermidis visually. The present study found that 2 of 8 Gram-positive bacteria (25%) were biofilm-producing S. epidermidis. One of S. epidermidis was moderate whereas the other was high biofilm-producing bacteria. Images of SEM showed that a high biofilm-producing S. epidermidis has a thicker ultrastructure of biofilm than the moderate biofilm-producing, whereas a control, the weak biofilm-producing S. epidermidis ATCC 12228 has the least biofilm. Both of S. epidermidis strains were sensitive to Gentamicin, Moxifloxacin, Quinupristin/Dalfopristin, Linezolid, Vancomycin, Doxycycline, Minocycline, Tetracycline, Tigecycline, and Nitrofurantoin. Furthermore, both S. epidermidis strains were resistant to the other (63) antibiotics. In conclusion, two strains of S. epidermidis in this study have different capabilities to form the biofilm which showed that high biofilm-producing strain was thicker than moderate biofilm-producing strain by scanning electron microscopy. However, both of them were resistant to the same number of antibiotics.
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Author	Dr Dr DWI UTAMI ANJARWATI, M.Kes