

Biofilm Formation and Detection in Multi-drug Resistant Staphylococcus

Zill-e-Huma, Iffat Javed, Suhaila Mushtaq

Dept. of Microbiology, Post Graduate Medical Institute, Lahore.

Abstract

Background: Biofilm formation is an ultra thin slimy layer produced by certain bacteria that imparts very significant resistance against variety of antibiotics. Biofilm can be detected by tube and microtiter plate assay **Objectives:** To detect biofilm formation in Staphylococci isolated from various clinical samples received from hospitalized patients of Lahore General Hospital, Lahore and to compare biofilm detection by the Tube method and Microtitre plate assay

Study design: Experimental study

Place and Duration of Study: Microbiology laboratory, Post Graduate Medical Institute (PGMI), Lahore from December 2012 to June 2014

Material and Method: All specimens obtained from LGH were processed, Staphylococci species were isolated by routine microbiological and biochemical tests. Antibiotic sensitivity pattern was found out by modified Kirbybauer disc diffusion method and multi-drug resistant Staphylococci species were selected for further processing.

Staphylococcal isolates along with the controls were subjected to biofilm formation by two methods, Tube Method (qualitative) and Microtitre Plate Assay (quantitative).

Results: Biofilm formation was more commonly observed in the microorganisms with multi-drug resistance. Penicillin, 92 (97.87%); Cefoxitin, 56 (59.57%); Erythromycin, 64 (68.08%); Clindamycin, 51 (54.25%); Fluroquinolones, 38 (40.42%); Doxycyclin, 47 (50.00%); Linezolid, 6 (6.38%); Trimethoprim-Sulphmethaxazole, 77 (81.91);

Gentamicin, 36 (38.29%) Staphylococci species were resistant. Among the Staphylococcal isolates, resistant 88.29% Penicillin, 47.87% Cefoxitin, 72.32% Trimethoprim-Sulphmethaxazole, 61.70% Erythromycin, 48.93% Clindamycin, 35.10%

Flouroquinolones, 43.61% Doxycyclin, 5.31% Linezolid, 31.91% Gentamicin depicted biofilm formation by the Tube Method.

While among the Staphylococcal isolates resistant, 96.81% Penicillin, 56.38% Cefoxitin, 81.91% Trimethoprim-Sulphmethaxazole, 67.02% Erythromycin, 53.19% Clindamycin, 40.42% Flouroquinolones, 47.87% Doxycyclin, 6.38% Linezolid, 37.23% Gentamicin depicted biofilm formation by the Microtitre plate Assay.

Conclusion: Multiple drug resistant staphylococci are more prone to form biofilm and Microtitre plate assay is effective at determining biofilm as compared to Tube method.

Keywords: Multi drug resistant (MDR), biofilm formation, Staphylococci species.