Layouts of biomedical devices were tightly related with the emergence of Staphylococcus epidermidis as a major cause of nosocomial infections because of its ability to form biofilm on the biomaterial surfaces” Mekni et al (2015).

Abstract:

BACKGROUND: Layouts of biomedical devices were tightly related with the emergence of Staphylococcus epidermidis as a major cause of nosocomial infections because of its ability to form biofilm on the biomaterial surfaces. This fact led researchers to develop in-vitro models to simulate what is really happening during biofilm formation process in order to have a better understanding of this phenomena and then to control it and to resolve the associated problems. The aim of this paper was to develop a homemade dynamic device based on instruments used in clinical practice, easy to mount, with low cost and with no sophisticated features.

METHODS: used to evaluate this dispositive were hydrodynamic calculation and enumeration of bacterial cells on petri dishes and with real time polymerase chain reaction during simulation of Staphylococcus epidermidis biofilm eradication with daptomycin.

RESULTS: With hydrodynamic calculation, Reynolds number was estimated to be 26.62 corresponding to a perfect laminar flux giving suitable dynamic growth environment for such experiment. Data recovered from cell enumeration with the two methods showed that bacterial colonization of the tested catheter segment was significantly reduced after 24 and 48h of treatment with daptomycin (P<0.01) reflecting a considerable reliability of this device.

CONCLUSION: the simple dispositive developed in this work has shown acceptable hydrodynamic proprieties and good reliability making research on biofilm easy to reach.

Reference:

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