

## **Rapid method for detection of Minimum Biofilm Eradicating Concentration (MBEC) (Patent Awarded: 375617)**

**Preamble:** Some antibiotics are effective at Minimum Inhibitory Concentration (MIC) level both in-vitro and in-vivo while others are not. This represents the problem faced by the physician dealing with a likely biofilm associated infection. MIC data presents the clinician with a selection of antibiotics that appear efficacious against the patients isolates; however the history of treatment with the current patients have taught the clinician that there may be a poor correlation between MIC values and outcome when treating chronic, recurrent or devised related infections which are mainly caused by biofilm forming pathogens. Resolution of the problem regarding choice of antibiotics to treat biofilm infection could be achieved by utilizing an assay system that can select antibiotics and biocides based on activity against biofilms. The MBEC would represent the concentration of antibiotics and biocide capable of killing a biofilm and would be equivalent to the Minimum Bactericidal Concentration used to determine killing efficacy of antibiotics against planktonic populations.

Often the MIC concentration of antibiotic, which by definition is efficacious against the planktonic cells, was not effective against biofilm cultures of same organisms. The biofilm often require from 10 to 1000 fold the concentration of antibiotics to be eradicated as compared to planktonic bacteria.

The existing method for determine of minimum biofilm eradicating concentration are

- 1) Tube method
- 2) Tissue culture plate method
- 3) Method using Calgary Biofilm Device (Invotech, Canada)

First two methods require 120 h for determination of MBEC. Calgary method requires lesser time of 66 h but is too costly and not available in routine diagnostic labs.

### **Salient features of the method devised for MBEC detection:**

- Colorimetric method rapid for detection of Minimum biofilm eradicating concentration of antibiotics against biofilm forming pathogens.
- Results obtained in just 55h than the other three methods i.e. Tissue Culture Plate method and Test Tube method that required 120 h and the Calgary method that requires 66 to 70 hours.
- It gives 98% accurate results as with the reference method
- Cost effective

- Easy to perform and require fewer amount of media.
- Can be performed in facility constrained laboratory

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