

Gradient Plate for Hicomb Minimum Inhibitory Concentration (MIC) Test

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Abstract

Background and objectives: "The comb antibiotic sensitivity test" is a quick, reliable and cost effective method to determine the susceptibility of bacteria to different antibiotics. The purpose of this study is to design a plate that is easy and quick to use, and enable to be interpreted easily without the need for measurement of the margins with a ruler.

Material and Methods: First, Clinical and Laboratory Standards Institute data about the maximum growth inhibitory haloes formed with antibiotics and various micro-organisms were statistically examined and determined that the most (99.7%) zone of inhibition growth is formed in the range of 42 mm. Accordingly, the obtained number (42 mm) and conventional plate size (100 mm) used for testing sensitivity were punched into *Solid works software* which was used to determine the best place of strip and shoulder plates. After that the efficacy this media were examined by determination of MIC *Staphylococcus aureus* and *Klebsiella pneumonia*, non-graded and graded plate shoulders were searched and compared.

Results: Has been placed two combs MIC in a plate in this method and didn't create growth inhibitory haloes interferences. Obtained MIC for Nitrofurantoin(10 µg/ml) , Amikacin(0.5 µg/ml), Gentamicin(1 µg/ml) , and Amoxicillin (0.5 µg/ml) against S.aureus , MIC Nalidicsic Acid, Amikcin, Gentamicin and Nitrofurantoin against K.pneumonia was 0.1, 0.5, 0.5 and 10 µg/ml ,respectively.

Conclusion:The comparison between this new innovative method and standard methods (Clinical Laboratory Standards Institute - CLSI) shows that there a marked reduction in the interference of antibiotic therapy and will also reduce time of interpretation.

Key words: Plate, Antibiogram Comb, MIC, Antibiotics, Drug resistance.