

In Vitro Antibacterial Testing Service

Introduction

In vitro antibacterial testing is usually used to detect the antibacterial effects of various drugs, antibacterial peptides, antibacterial materials, etc., and its applications are found in various fields such as medicine, food, industry, and agriculture.

Creative Diagnostics utilizes rigorous experimental design and operation, and employs imported automatic image analysis colony counters for data analysis to provide customers with objective and rigorous antibacterial test results.

Service Projects

• Minimum Inhibitory Concentration (MIC) Assay

The first step in antimicrobial discovery is usually the screening of drug library candidates against the MIC (Minimum inhibitory concentration). Therefore, MIC is usually the starting point for more extensive preclinical evaluation of new antibacterial agents. The determination method of MIC is to prepare test chemical solutions *In vitro* at increasing concentrations. Using agreed breakpoint values, the results are classified as susceptible (often referred to as sensitive), moderate or resistant to specific antibacterial agents. The MIC value can be determined based on the optical density using a spectrophotometer or disk diffusion method. This is a time and cost saving strategy for screening and identifying promising drug candidates. The assay can also be customized to determine the minimum test concentration required to inhibit the growth of a group of test isolates (MIC50 and MIC90) by 50% or 90%.

• Minimum Bactericidal Concentration (MBC) Assay

Even if a specific MIC exhibits good inhibitory activity, inoculation of bacteria on agar may still result in bacterial growth, because the antibacterial agent at that concentration will not cause the complete bacterial death. The minimum bactericidal concentration (MBC) is the minimum concentration of an antibacterial agent required to kill a specific bacterium. In antibacterial testing, the MBC is a complement to the MIC. A colony count equal to 0.1%

In Vitro Antibacterial Testing Service

(99.9% reduction) of the original inoculum is considered the MBC. It is generally believed that MBC does not exceed four times the MIC, and the antibacterial agent is considered to be bactericidal. If the MBC of the tested drug against the tested microorganism is ≥ 32 times the MIC, it can be determined that the microorganism has developed resistance to the tested drug.

• Antimicrobial Susceptibility Testing

Antimicrobial susceptibility testing is an experimental method for determining the sensitivity of test bacteria to antimicrobial drugs. The basis of the drug susceptibility testing method is to expose bacteria to antibiotics and observe their response ("phenotypic testing") or specific genetic testing ("genetic testing"). At Creative Diagnostics, the main methods for drug susceptibility testing include paper diffusion method, dilution method (including agar and broth dilution method), antibiotic concentration gradient quantitative method and automated instruments.

• Minimum Doubling Time/Growth Curve (MDT)

The minimum doubling time (MDT) test is used to determine the time required to double the number of bacteria. This experiment illustrates the effect of antibiotics on bacterial growth by comparing the effects of the addition and non-addition of antibacterial compounds on bacterial growth in broth cultures. Creative Diagnostics generally uses a spectrophotometer to evaluate the OD of the bacterial suspension to deduce the concentration of the bacterial suspension, so as to draw the growth curve and calculate the minimum doubling time.

• Antimicrobial Synergy Testing/Checkerboard Assay

The antibacterial synergy test/checkerboard assay is an experimental method used to evaluate the interaction of two antibacterial test compounds. In this assay, the MIC and MBC values of the test compound are used alone and combined with the MIC and MBC values of each bacterial strain evaluated to calculate the accumulation. Synergy measurements by checkerboard analysis can be used to determine the change in antibacterial efficacy of a combination of antibiotics relative to their individual activity. The comparison is then calculated as a fractional inhibitory concentration (FIC) index value. The FIC index value shows the combination of antibiotics with the greatest change compared to the MIC of a single antibiotic.

Our Advantages

- High efficiency and quality of antimicrobial synergy detection services ensured
- Competitive price in the market of antimicrobial synergy testing services
- 24/7 online service
- Timely result feedback

In Vitro Antibacterial Testing Service

Bacterial Assays Available

- Creative Diagnostics combines infectious disease and analytical expertise to provide our clients with the most powerful portfolio of antiviral and antimicrobial *in vitro* testing services.
- Creative Diagnostics offers a set of assays in the major bacterial families as shown in the table below. In addition, Creative Diagnostics can also provide rare clinical isolates.

Aerobic bacteria	Anaerobic bacteria	Fungus
Staphylococcus aureus	Helicobacter pylori	Candida albicans
Methicillin-resistant Staphylococcus aureus, MRSA	Bacteroides	Candida tropicalis
Staphylococcus edaphicus	Propionibacterium acnes	Candida parapsilosis
Streptococcus pyogenes	Clostridium perfringen	Aspergillus flavus
Streptococcus pneumoniae	Clostridium difficile	Aspergillus fumigatus
Escherichia coli	Bifidobacterium	Candida portuguese
Pseudomonas aeruginosa	Eubacterium limosum	Candida krusei
Bacillus subtilis		
Klebsiella pneumoniae		
Haemophilus parainfluenzae		
Haemophilus influenzae		
Mycobacterium avium intracellulare		

CREATIVE DIAGNOSTICS

In Vitro Antibacterial Testing Service



Contact Us:

Tel: 1-631-624-4882 (USA) / 44-161-818-6441 (Europe)

Fax: 1-631-938-8221

Email: info@creative-diagnostics.com

antiviral.creative-diagnostics.com

CD Creative Diagnostics®