Scattered Light Integrating Collector (SLIC)
Point-Of-Care (Near Patient) Clinical Breakpoint Analysis

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I. Introduction

Rapid diagnostics have been cited by governments and health protection agencies as a key tool to redress the rise of antimicrobial resistance. Here we present a technology that can not only establish the susceptibility of an organism based on its breakpoint in seconds but can also define that organism’s full resistance profile in less than 30 minutes. Slow DST result in:

↑ Treatment failure
↑ Antibiotic consumption
↑ Risk of antimicrobial resistance (AMR)

II. Aims & Objectives

AIM
• To investigate Scattered Light Integrating Collector (SLIC) as a tool for determining drug susceptibility tests.
• To determine how quickly this can be achieved in a clinically relevant manner.

OBJECTIVES
1. Optimise rapid susceptibility screening.
2. Determine if SLIC can determine resistance in less than 30 minutes.

III. Methods

1. HOW DOES SLIC WORK?

SLIC can monitor discrete changes in bacterial cell population based on the total light scatter detected. Differentiation between cell response is either growth, inhibition or cell death. Differentiation is possible through the distinct change in light scattering properties.

III. Methods

2. RAPID DETERMINATION OF DRUG SUSCEPTIBILITY

Resistant organisms that commonly cause disease were selected and tested against an AST panel of 5 antibiotics at EUCAST designated breakpoints. Each SLIC run consisted of a growth control (media + sample + diluent) & 5 antibiotic doses. The growth curve was used as a reference to determine if the percentage inhibition (%) was consistent with a resistant (<50%) or susceptible response (>50%).

III. Methods

3. RAPID AST WITH RESISTANT ORGANISMS

Resistance is a key element in the development of new antibiotics. The rapid detection of susceptibility is therefore of paramount importance. The SLIC technology offers a simple and affordable method to determine antibiotic susceptibility in minutes.

Table 1. SLIC offers rapid susceptibility testing even for slow growing organisms.

V. Discussion & Conclusion

Rapid AST capacity is now more important than ever. Having an affordable device that can give reliable data in less and half an hour is a “game-changing technology”.

Unnecessary and inappropriate antibiotic prescriptions are fueling the rise of MDR bacteria worldwide. SLIC offers a highly sensitive method for the detection of antimicrobial resistance in a clinically useful timeframe.

Rapid detection of susceptibility in minutes

Monitoring antimicrobial response in real-time

Potential to assist clinicians in antibiotic selection