Paper # **C 315**

An Evaluation of Gemifloxacin, Trovafloxacin and Ciprofloxacin on the Sensititre Dried Susceptibility Panel as Compared to NCCLS Microdilution Method

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ABSTRACT

An in-house evaluation was undertaken to compare the performance of three quinolones; Gemifloxacin (0.002 - 32g/mL), Ciprofloxacin (0.002 - 64g/mL), and Trovafloxacin (0.002 - 64g/mL) on the dried Sensititre 18 – 24 hour Susceptibility Panel and using the NCCLS broth microdilution reference method as the standard. The evaluation consisted of 199 isolates, which consisted of 23 gram positive, 117 gram negative and 59 fastidious strains. The isolates were a mix of CDC strains and clinical strains provided by SmithKline Beecham from their collection and were chosen to represent MICs at or near the sensitive, intermediate, and resistant breakpoints for these quinolones. The study also included the standard ATCC quality control strains for microdilution susceptibility testing which were run as controls on each day of testing. Essential agreements were calculated using the 1 log dilution standard for comparison studies. The overall agreement rates for the three quinolones evaluated were as follows for initial and after retesting respectively: Ciprofloxacin 99% and 100%, Trovafloxacin 98% and 99.9%, and Gemifloxacin 98% and 100%.

This evaluation indicates that the performance of these three quinolones on the dried Sensititre 18 – 24 hr. Susceptibility Panel is equivalent to the NCCLS broth microdilution method.

INTRODUCTION

This comparison study aims to validate the performance of the commercially manufactured Sensititre dried Susceptibility Panel using the NCCLS reference microdilution method as the standard.

MATERIALS & METHODS

Antimicrobial Agents

Antimicrobial used in study and source:

(GEM) Gemifloxacin batch # EF03-14RIP5 (SmithKline Beecham, Harlow, UK)
(CIP) Ciprofloxacin batch # 291569c (Bayer AG., Germany)
(TRV) Trovafloxacin batch # 671070-700000 (Pfizer, Groton, Conn.)

Isolates

SmithKline Beecham provided 199 isolates to Trek Diagnostic Systems

36	*Streptococcus pneumoniae*
10	*Staphylococcus aureus*
4	*Staphylococcus epidermidis*
1	*Staphylococcus saprophyticus*
8	*Enterococcus faecalis*
23	*Haemophilus influenzae*
22	*Escherichia coli*
11	*Enterobacter aerogenes*
11	*Enterobacter cloacae*
10	*Proteus mirabilis*
5	*Proteus vulgaris*
22	*Pseudomonas aeruginosa*
6	*Serratia marcescens*
23	*Klebsiella pneumoniae*
4	*Klebsiella oxytoca*
1	*Morganella morganii*
1	*Providencia rettgeri*
1	*Providencia stuartii*

Methods

- Sensititre 18 – 24 hr. susceptibility panel package insert was followed for set up of the Sensititre panel.
- NCCLS M7-A4 was followed for performing the reference method
- The appropriate medium/organism combinations, according to the NCCLS M7-A4 were utilized.
- Quality Control isolates were tested daily on both the reference and Sensititre panel.

MATERIALS & METHODS cont.

QC isolates and ranges used (µ/mL)		GEM	CIP	TRV
Staphylococcus aureus	ATCC 29213	0.008-0.03	0.12-0.5	0.008-0.03
Enterococcus faecalis	ATCC 29212	0.015-0.12	0.25-2	0.06-0.25
Escherichia coli	ATCC 25922	0.004-0.016	0.004-0.016	0.004-0.016
Pseudomonas aeruginosa	ATCC 27853	0.25-1	0.25-1	0.25-2
Streptococcus pneumoniae	ATCC 49619	0.008-0.03	---------	0.06-0.25
Haemophilus influenzae	ATCC 49247	0.002-0.008	0.004-0.03	0.004-0.016

All 199 isolates were tested on both the reference and the Sensititre panels. The MICs were recorded and compared for Essential Agreement (within 1 two-fold dilution). All organism/antimicrobial combinations that resulted in a greater than 1 two fold dilution error were retested in triplicate on both the reference and Sensititre panels for resolution of discrepancies.

RESULTS

Before Retesting:

% Essential agreement

Isolate and Number	Tested	GEM	CIP	TRV
Enterobacteriaceae	95	98%	98%	96%
Non Enterobacteriaceae	22	95%	100%	100%
Staphylococcus	15	100%	100%	100%
Enterococcus	8	100%	100%	100%
Streptococcus	36	97%	100%	100%
Haemophilus	23	100%	100%	100%

Interpretive Criteria	GEM	CIP	TRV
No. Sensitive	187	182	179
No. Intermediate	8	6	-
No. Resistant	4	11	20
% Agreement Essential/Categorical	98/100	99/100	98/100

RESULTS cont.

After Retesting:

% Essential agreement

Isolate and Number	Tested	GEM	CIP	TRV
Enterobacteriaceae	95	100%	100%	99%
Non Enterobacteriaceae	22	100%	100%	100%
Staphylococcus	15	100%	100%	100%
Enterococcus	8	100%	100%	100%
Streptococcus	36	100%	100%	100%
Haemophilus	23	100%	100%	100%

Interpretive Criteria	GEM	CIP	TRV
No. Sensitive	187	182	179
No. Intermediate	8	6	-
No. Resistant	4	11	20
% Agreement Essential/Categorical	100/100	100/100	99/100

CONCLUSIONS

- This study validates that the Sensititre dried Susceptibility panels performance is equivalent to the NCCLS reference microbroth dilution method.
- For the 3 quinolones tested the overall agreement for the gram negative isolates was 99%, with the gram positive isolates the overall agreement was 100%, and with the fastidious isolates the overall agreement was 100%.

REFERENCES

1. National Committee for Clinical Laboratory Standards. 1997. Approved Standard M7-A4. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically-Fourth Edition. NCCLS, Villanova, Pa.