

Antimicrobial Susceptibility Testing of Anaerobic Bacteria using Sensititre plates

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Alexandros Petropoulos, MD

Current method at KS

- Blood agar plates
- Inoculum 0,5 McF
- MIC determination with gradient test for penicillin, piperacillin-tazobactam, clindamycin, metronidazole, meropenem
- Incubation 40-48h at 35 °C

Aim of this study

To validate an alternative AST by using Sensititre plates and read those plates using the Vizion system and manually

Advantages:

- AST with microtiter plates is more related to reference method than gradient tests
- Possibility to connect Vizion to LIS for automatic MIC-data transfer

Material

| Genus/ species | No of isolates |
|---------------------------------------|-----------------------|
| <i>Fusobacterium spp</i> | 1 |
| <i>Clostridium spp</i> | 12 |
| <i>Prevotella spp</i> | 4 |
| <i>Eggerella spp</i> | 2 |
| <i>Bacteriodes fragilis- gruppen</i> | 10 |
| <i>Actinomycess spp</i> | 7 |
| <i>Veillonella spp</i> | 3 |
| <i>Gram-positive anaerobic coccus</i> | 1 |
| <i>Propionibacterium spp</i> | 4 |
| <i>Eubacterium spp</i> | 1 |
| <i>Lactobacillus spp</i> | 5 |
| Total | 50 |

Method

AN02B

| Antimicrobial $\mu\text{g/ml}$ | Dilution Range |
|-----------------------------------|-----------------|
| Ampicillin/sulbactam | 0.5/0.25 - 16/8 |
| Amoxicillin/clavulanic acid | 0.5/0.25 - 16/8 |
| Ampicillin | 0.5 - 16 |
| Cefotetan | 4 - 64 |
| Cefoxitin | 1 - 32 |
| Chloramphenicol | 2 - 64 |
| Clindamycin | 0.25 - 8 |
| Imipenem | 0.12 - 8 |
| Meropenem | 0.5 - 8 |
| Metronidazole | 0.5 - 16 |
| Mezlocillin | 4 - 128 |
| Penicillin | 0.06 - 4 |
| Piperacillin | 4 - 128 |
| Piperacillin/tazobactam | 0.25/4 - 128/4 |
| Tetracycline | 0.25 - 8 |

- Followed the manufacturers instructions
- Incubated at 35 °C
- Reading manually and with Sensititre Vizion system

Sensititre

Vizion System



No difference in MIC values
between manual reading and
reading with Vizion

Sensititre vs Brucella agar

| Brucella \ Sensititre | S | I | R |
|-----------------------|-----|---|----|
| S | 193 | | 1 |
| I | 1 | | 2 |
| R | | 5 | 48 |

8 minor errors, 1 very major error?

Sensititre vs Blood agar

| Sensititre \ Blood agar | S | I | R |
|-------------------------|-----|---|----|
| | S | I | R |
| S | 193 | | 1 |
| I | 1 | | 2 |
| R | | 2 | 51 |

5 minor errors, 1 very major error?

Very major error or major error?

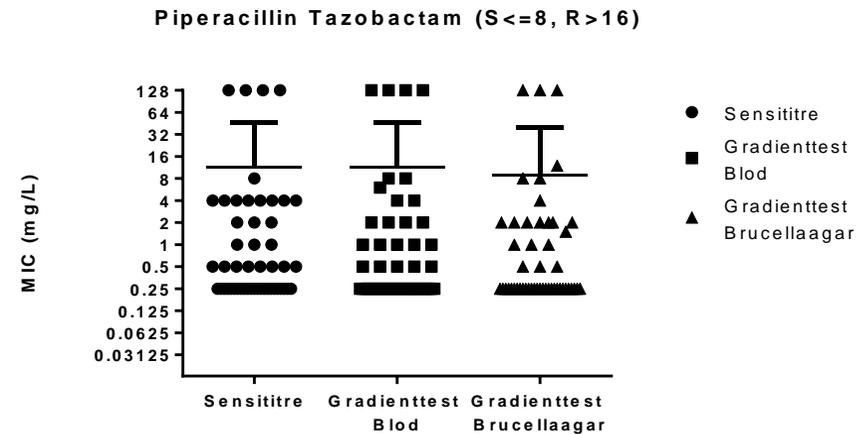
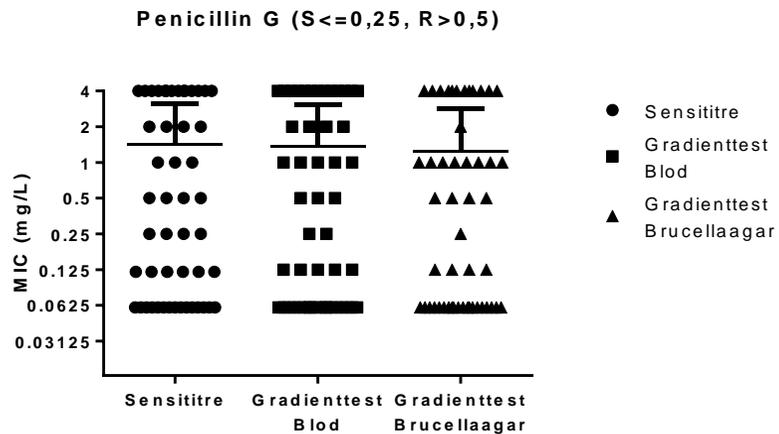
Clostridium species isolate (MALDI-TOF: *C. hathewayi* >2,0 score)

Blood agar and Brucella agar: meropenem MIC = 32 mg/L

Sensititre: meropenem MIC = 0.5 mg/L

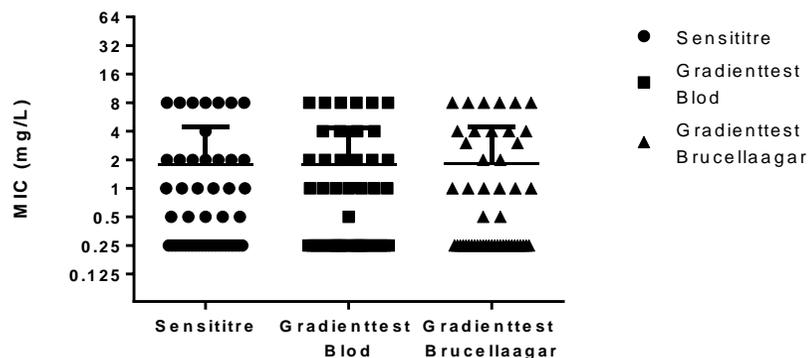
EUCAST breakpoints for meropenem: S_≤2, R_>8

MIC distributions, all methods

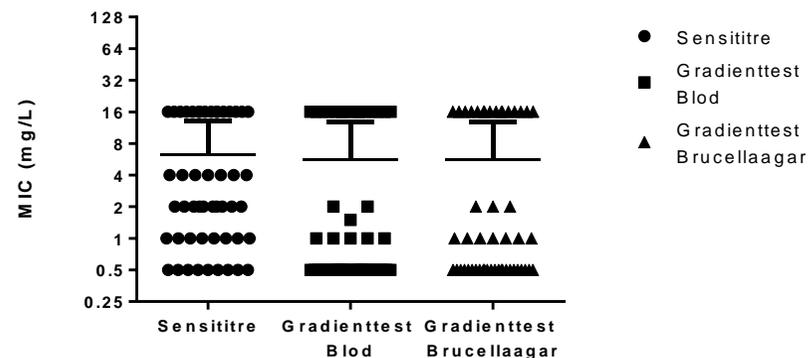


MIC distributions, all methods

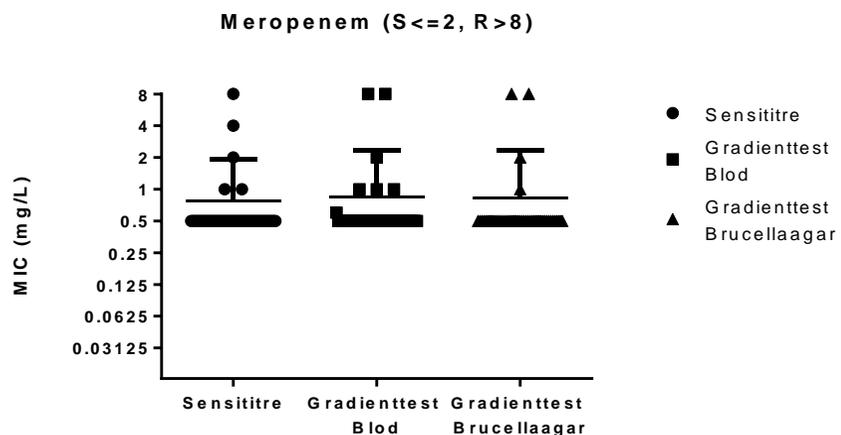
Klindamycin (S<=4, R>4)



Metronidazol (S<=4, R>4)



MIC distributions, all methods



No significant differences in MIC-values distributions

Conclusion

MIC-determination with Sensititre plates is a reliable alternative method

More standardized execution (avoid spreading agar plates)

The plates can be read manually or using Vizion which can provide automatic data transfer to LIS

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