In vitro activity of cefiderocol and comparators against multi-drug resistant *Acinetobacter baumannii* isolates

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BACKGROUND

Acinetobacter baumannii is an aerobic Gram-negative bacterium which causes facultative hospital infections and in settings like Greece exhibits high resistance rates against most antimicrobial agents[1]. Cefiderocol is a siderophore cephalosporin intended to treat infections due to multi-drug resistant (MDR) Gram negative aerobic bacteria[2].

AIM

The aim of our study was to assess the *in vitro* activity of cefiderocol and comparators against multidrug (MDR) resistant *A. baumannii* isolates.

METHODS

A total of 29 MDR *A. baumannii* strains recovered from clinical samples (23 blood, 2 central line catheters, 2 bronchial aspirates, 1 pus and 1 urine) from January to April 2022 were included in the study. Species identification and antimicrobial susceptibility testing for most comparators were performed with the Vitek®2 automated system (*bioMérieux*, France) except for colistin tested by the broth microdilution method using the ComASP™ Colistin 0.25-16 μg/mL panel (Liofilchem®) and tigecyclin tested by Liofilchem® MIC Test Strips. Cefiderocol MICs were determined via the Liofilchem® MIC Test Strips on Mueller Hinton II Agar (BD™). MIC_{50} and MIC_{90} were calculated for all antimicrobials and EUCAST 2022 clinical breakpoints[3] were applied wherever applicable. Susceptibility to tigecyclin was interpreted according to the FDA breakpoints and to cefiderocol according to the EUCAST PK/PD breakpoints. *Pseudomonas aeruginosa* ATCC25853 and *Klebsiella pneumoniae* ATCC700603 were used as quality control.

RESULTS

Cefiderocol MICs ranged from 0.064 to >256 mg/L with the majority of the isolates being susceptible. The comparators had very low to zero susceptibility rates against the tested isolates. MIC_{50}, MIC_{90}, MIC range and susceptibility rates are displayed analytically on Table 1.

CONCLUSIONS

Cefiderocol exhibited potent *in vitro* activity against MDR *Acinetobacter baumannii* isolates. It seems to be a valuable option where limited or no therapeutic alternatives are available.

Table S1. Antimicrobial activity of cefiderocol and comparators against MDR *A. baumannii* isolates

Antimicrobial agent	MIC_{50} (mg/L)	MIC_{90} (mg/L)	MIC range (mg/L)	Susceptibility (%) EUCAST/FDA
Cefiderocol	2	>256	0.064->256	69.0
Meropenem	≥16	≥16	≥16-≥16	0.0
Imipenem	≥16	≥16	≥16-≥16	0.0
Colistin	8	>16	0.25->16	34.5
Tigecyclin	4	≥8	0.5-32	18.5
Ciprofloxacin	≥4	≥4	≥4-≥4	0.0
Levofloxacin	≥8	≥8	4-≥8	3.4
Amikacin	≥64	≥64	16-≥64	0.0
Trimethoprim/sulfamethoxazole	≥320	≥320	≥320-≥320	0.0

REFERENCES

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