

Abstract

In Vitro Activity of Cefiderocol and Comparators against Multi-Drug Resistant *Acinetobacter baumannii* Isolates[†]

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[†] Presented at the 2nd International Electronic Conference on Antibiotics—Drugs for Superbugs: Antibiotic Discovery, Modes of Action and Mechanisms of Resistance, 15–30 June 2022; Available online: <https://eca2022.sciforum.net/>.

Keywords: Cefiderocol; MDR *Acinetobacter baumannii*; in vitro activity

1. Introduction

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]. The aim of our study was to assess the in vitro activity of cefiderocol and comparators against multidrug resistant *Acinetobacter baumannii* isolates.

2. Methods

A total of 29 MDR *Acinetobacter 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[™]). MIC₅₀ and MIC₉₀ 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.

3. 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. MIC₅₀, MIC₉₀, MIC range and susceptibility rates are displayed analytically on Table 1.

Citation: Tychala, A.; Protonotariou, E.; Mantzana, P.; Meletis, G.; Gkeka, I.; Skoura, L. In Vitro Activity of Cefiderocol and Comparators against Multi-Drug Resistant *Acinetobacter baumannii* Isolates. *Med. Sci. Forum* **2022**, *2*, x. <https://doi.org/10.3390/xxxxx>

Academic Editor(s):

Published: date

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Table 1. Antimicrobial activity of cefiderocol and comparators.

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

4. Discussion

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.

Author Contributions:

Funding:

Institutional Review Board Statement:

Informed Consent Statement:

Data Availability Statement:

Conflicts of Interest:

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