Cefepime-AAI101 and Cefepime MIC Quality Control Ranges Using a CLSI M23-AS Multi-Laboratory Study Design

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Introduction

AAI101 is a novel β-lactamase inhibitor highly active against extended-spectrum β-lactamases (ESBLs) that can be synergistic in bacterial resistance toward oxacillin-resistant Staphylococcus aureus (MRSA) and extended-spectrum β-lactamase (ESBL)-producing bacteria. Clinical and Laboratory Standards Institute (CLSI) M23-A5 study was established to determine the cefepime quality control (QC) ranges against CLSI QC reference strains for cefepime-AAI101 (fixed AAI101 concentration of 4 µg/mL) and cefepime (8 µg/mL) MIC values from the participating laboratories within the approved QC ranges for each of the reference stains tested (Table 1).

Materials and Methods

- **Investigators and laboratories participating in CLSI M23 (2018)**: broth microdilution QC studies for cefepime (8 µg/mL) and AAI101 (4 µg/mL) were conducted to determine the MIC ranges against CLSI QC reference strains for cefepime (8 µg/mL) and cefepime-AAI101 (4 µg/mL) combinations.

- **Quality control (QC) reference strains tested** included certified good-manufacturing practice facility (T. Fritsche, MD, PhD Marshfield Laboratories, Marshfield, Wisconsin, and E. Munson, PhD Wheaton Franciscan Laboratory, Wauwatosa, WI) for cefepime QC ranges against CLSI QC reference strains (Table 2).

- **Frozen-form broth microdilution susceptibility panels were prepared in a Frozen-form broth microdilution susceptibility panels were prepared in a Tier 2 (CLSI M23-A5) clinical laboratory setting (McGee, MD, et al. 1997).**

- **Study Design: Cefepime-AAI101 and Cefepime MIC Quality Control Ranges Using a CLSI M23-AS Multi-Laboratory Study Design** involved a minimum of 7 participating laboratories (G. Denys, PhD Indiana University Health, Methodist Hospital; T. Fritsche, MD, PhD Marshfield Laboratories, Marshfield, Wisconsin; D. Hardy, PhD University of Rochester Medical Center; E. Munson, PhD Wheaton Franciscan Laboratory, Wauwatosa, WI; F4 = fixed AAI101 concentration of 4 µg/mL, F8 = fixed AAI101 concentration of 8 µg/mL; Table 2).

- **Poster #P2492**

Results

- **Table 1 Investigators and laboratories participating in the cefepime-AAI101 and cefepime M23 broth microdilution quality control studies** were conducted to determine the MIC ranges against CLSI QC reference strains for cefepime (8 µg/mL) and cefepime-AAI101 (4 µg/mL) combinations.

- **Table 2 CLSI approved broth microdilution quality control ranges for cefepime-AAI101 and cefepime against reference strains** were determined by the CLSI M23-A5 study.

- **Table 3 Colony counts for the quality control reference strains used in broth microdilution susceptibility testing** were determined by the CLSI M23-A5 study.

Table 4 Inter- and intralaboratory comparisons of cefepime-AAI101 (fixed AAI101 concentration of 4 µg/mL) MIC values against E. coli NCTC 13535 for an interlaboratory protocol meeting the study design guidelines found in CLSI M23-AS4 (2018).

**Figures:**

**Figure 1 Cefepime-AAI101 (red AAI101 concentration of 4 µg/mL) MIC distributions by medium for Escherichia coli NCTC 13535**

**Figure 2 Cefepime-AAI101 (red AAI101 concentration of 5 µg/mL) MIC distributions by medium for Escherichia coli NCTC 13535**

Acknowledgements

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References


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**Figures:**

**Figure 1 Cefepime-AAI101 (red AAI101 concentration of 4 µg/mL) MIC distributions by medium for Escherichia coli NCTC 13535**

**Figure 2 Cefepime-AAI101 (red AAI101 concentration of 5 µg/mL) MIC distributions by medium for Escherichia coli NCTC 13535**

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References


