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P0186 Correlations between cefidercol broth microdilution MICs and disk diffusion inhibitory zone diameters among target Gram-negative organisms

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Background: Cefiderocol (S-649266) is a novel siderophore cephalosporin with potent activity against a wide variety of Gram-negative bacteria, including carbapenem-resistant strains. In order to evaluate the utility of disk diffusion for *in vitro* susceptibility testing of cefiderocol, this study was conducted to determine the correlation between broth microdilution MICs and disk diffusion inhibitory zone diameters for this drug.

Materials/methods: In all, 1319 gram-negative clinical isolates were included in this study (807 Enterobacteriaceae, 173 *Pseudomonas aeruginosa*, 254 *Acinetobacter baumannii*, 3 *Burkholderia cepacia*, and 82 *Stenotrophomonas maltophilia*). The study isolates represented a global collection obtained during 2014 and 2015. All isolate identifications were confirmed and susceptibility testing was performed centrally (IHMA, Inc., USA). Susceptibility testings were conducted according to the Clinical and Laboratory Standard Institute guidance. For broth microdilution, iron-depleted CAMHB (ID-CAMHB) was used. Disk diffusion tests using the disk containing 30 µg cefiderocol were performed on unsupplemented standard Mueller-Hinton agar (MHA). In addition, the potential effect of the addition of iron into MHA for disk diffusion testing was evaluated with two QC strains (*E. coli* ATCC 25922 and *P. aeruginosa* ATCC 27853).

Results: For the two QC strains (*E. coli* ATCC 25922 and *P. aeruginosa* ATCC 27853) the addition of iron at 1 mg/L to MHA did not notably impact the zone diameters obtained. Because the iron content in MHA is approximately 0.3 mg/L, it was determined that disk diffusion studies could be conducted using standard MHA. Correlation between MIC values in ID-CAMHB and disk zones was relatively high for all test isolates. The R^2 values observed for Enterobacteriaceae, *A. baumannii*, *P. aeruginosa,* and *S. maltophilia* were 0.70, 0.81, 0.52, and 0.65, respectively. The relatively low R^2 values observed for *P. aeruginosa* and *S. maltophilia* may not reflect true correlation due to the lack of resistant strains.

Conclusions: The disk diffusion studies using a 30 µg of cefiderocol disk and standard MHA showed that the zone diameters obtained in these studies have a good correlation with the MIC determined using ID-CAMHB. Disk diffusion test was validated as an alternative method for testing cefiderocol MIC for Gram-negative bacteria.