Omadacycline is a new antibiotic, the first aminomethylcycline under development for use in skin and soft tissue and respiratory infections. Testing of this agent requires the use of fresh media (less than 12 hours old) since the compound is broken down by oxygen in the media which increases over time.

Methods: This study was performed according to the Clinical and Laboratory Standards Institute (CLSI) guidelines. Broth microdilution MIC panels were prepared and distributed frozen to 8 independent laboratories for testing. Three lots of Brocilia broth supplemented with human (5 µg/ml) and Vitamin K1 (11 µg/ml) and lyzed horse blood (5%) was used to prepare omadacycline dilutions. Broths were prepared on the same day that MIC panels were posted and frozen at -70 °C. 

Results: Eight laboratories tested Omadacycline against B. fragilis ATCC 25285 (BF), B. thetaiotaomicron ATCC 29741 (BT) and C. difficile ATCC 700057 (CD) and E. lenta ATCC 43055 (EL) using the CLSI reference broth microdilution (BMD) and agar dilution (AD) methods for anaerobes.

Conclusions: Omadacycline MIC ranges approved for C. difficile ATCC 700057 were approached in two out of the three tests and included at least 97.1% of the data results for each QC strain. Omadacycline MIC values associated with these out of control data were removed in order to establish the ranges approved.

Summary

CLSI Approved Quality Control Ranges (µg/ml)

<table>
<thead>
<tr>
<th>Control Strain</th>
<th>E. coli ATCC 25922</th>
<th>B. thetaiotaomicron ATCC 29741</th>
<th>E. coli ATCC 43055</th>
<th>C. difficile ATCC 700057</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omadacycline</td>
<td>0.02-1</td>
<td>0.04-2</td>
<td>0.016-0.5</td>
<td>0.02-2</td>
</tr>
<tr>
<td>Vitamin K1</td>
<td>0.5-1</td>
<td>1-2</td>
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</tr>
</tbody>
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Conclusions: Omadacycline MIC ranges approved were all within a 3 or 4-fold dilution range and each range represented 99.5 to 100% of the data results for each QC strain. A decreased range was necessary to cover the expected MIC ranges for omadacycline except for 3 replicates of B. thetaiotaomicron vs. tigecycline. The omadacycline MIC values associated with these out of control data were removed in order to establish the ranges approved.

References


Quality Control Parameters for Broth Microdilution and Agar Dilution Susceptibility Tests of Omadacycline (formerly PTK-0796) Against B. fragilis ATCC 25285, B. thetaiotaomicron ATCC 29741, E. lenta ATCC 43055 and C. difficile ATCC 700057 Using Fresh Media

M. M. TRACZEWSKI*, S.D. BROWN
The Clinical Microbiology Institute, Williamsburg, VA

Abstract

Background: Omadacycline is a new antibiotic, the first aminomethylcycline under development for use in skin and soft tissue and respiratory infections. Testing of this agent requires the use of fresh media (less than 12 hours old) since the compound is broken down by oxygen in the media which increases over time.

Materials and Methods

Eight laboratories tested Omadacycline against B. fragilis ATCC 25285 (BF), B. thetaiotaomicron ATCC 29741 (BT) and C. difficile ATCC 700057 (CD) and E. lenta ATCC 43055 (EL) using the CLSI reference broth microdilution (BMD) and agar dilution (AD) methods for anaerobes.

Results

The following QCs were presented the CLSI antimicrobial susceptibility subcommittee and were approved.

Control Strain 
ATCC 25285 | ATCC 29741 | ATCC 43055 | ATCC 700057 |
<table>
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Conclusions: Omadacycline MIC ranges approved were all within a 3 or 4-fold dilution range and each range represented 99.5 to 100% of the data results for each QC strain.

Background

Omadacycline is the first aminomethylcycline to enter clinical development. OMC is being developed globally as an intravenous and oral, once daily monotherapy antibiotic, the first aminomethylcycline to enter clinical development. OMC is designed to overcome tetracycline resistance mechanisms and has been shown to have potent in vitro activity and in vivo efficacy against the key pathogens of ABSSSI and CAABP. OMC is resistant to macrolides, lincosamides, and streptogramins but is readily degraded in the human gut and by human intestinal flora.

Materials and Methods

• Eight laboratories tested Omadacycline against B. fragilis ATCC 25285 (BF), B. thetaiotaomicron ATCC 29741 (BT) and C. difficile ATCC 700057 (CD) and E. lenta ATCC 43055 (EL) using the CLSI reference broth microdilution (BMD) and agar dilution (AD) methods for anaerobes.

• These lots of Brocilia broth and Brocilia agar supplemented with 5 µg/ml hemin, 1 µg/ml vitamin K, and 5% lyzed horse blood (BMH) or 5% lyzed sheep blood (AD) were used for testing all strains.

• Broth was prepared less than 12 hours prior to preparing and freezing MIC panels.

• Agar plates were poured fresh on the day of testing.

• Colony counts were performed at all laboratories.

• All testing met or exceeded the requirements of CLSI Guideline M2-A3.

• Data was analyzed using the method described in CLSI M23-A3 and checked using method of the Turridge et al.}

Acknowledgement

This study was funded by a grant from Pfizer Pharmaceuticals.