A Multi-Site Evaluation of Two New Echinocandins, Anidulafungin (AND), and Micafungin (MF) on a Colorimetric MIC Susceptibility Test Plate Compared with the CLSI M27 Reference Broth Micro Dilution (BMD) Plate for Antifungal Susceptibility Testing

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ABSTRACT

Background: Micafungin (MF) (Astellas Pharmaceuticals, Inc., Deerfield, IL) and anidulafungin (AND) (Pfizer Pharmaceuticals, Groton, CT) are glucon synthesis inhibitors of the echinocandin structural class. MF is used for the prevention of Candida infections in patients undergoing bone marrow transplantation. Clinical laboratories are increasingly testing MICs for the treatment of opportunistic fungal isolates. A multi-site evaluation was undertaken to determine the performance of the Sensititre YeastOne susceptibility plate (TREK Diagnostic Systems, Cleveland, OH) with MF and AND compared to the CLSI BMD.

Materials and Methods: 100 clinical and 100 challenge strains of C. albicans were tested at 3 sites and consisted of the following: 108 Candida species, 5 N/A, 52 C. glabrata, 20 C. lusitaniae, 20 C. krusei, 261 Candida dubliniensis, 2 Candida kefyr. The MICs were determined by observing the lowest antifungal concentration showing inhibition of growth as evidenced by color change. Growth in the wells was evident as a change in the colorimetric growth indicator from blue (negative) to pink (positive). MIC's are interpreted as the lowest concentration of antifungal solution remaining blue in color. The MIC for the YeastOne plate was read after 24 hours of incubation at 35°C and was compared to the growth control well.

RESULTS

This evaluation indicates that the Sensititre YeastOne plate with MF and AND is equivalent to the CLSI M27 BMD and is a potential method for susceptibility testing of MF and AND.

INTRODUCTION / OBJECTIVES

To evaluate MIC results with two new Echinocandins, anidulafungin (AND) (Pfizer Pharmaceuticals, Groton, CT) and micafungin (MF) (Astellas Pharma US, Inc., Deerfield, IL) are glucon synthesis inhibitors of the echinocandin structural class. MF is used for the prevention of Candida infections in patients undergoing bone marrow transplantation. Clinical laboratories are increasingly testing MICs for the treatment of opportunistic fungal isolates. A multi-site evaluation was undertaken to determine the performance of the Sensititre YeastOne susceptibility plate (TREK Diagnostic Systems, Cleveland, OH) with MF and AND compared to the CLSI BMD.

The recommended CLSI M27 quality control isolates were tested daily and performed within the CLSI expected QC ranges. Challenge isolates resulted in 89% EA before repeat testing and 100% EA in 95% essential agreement (EA) before repeat testing and 100% EA after repeat testing were tested daily and were within the CLSI expected QC ranges.

Test Results

<table>
<thead>
<tr>
<th>Antifungal Tested</th>
<th>Minimum Inhibitory Concentration (MIC) Limits Tested</th>
<th>MIC Distribution (+/- 2 log2 Dilutions) vs Micafungin (%)</th>
<th>MIC Distribution (+/- 2 log2 Dilutions) vs Anidulafungin (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF</td>
<td>&lt;=0.008 0.015 0.03 0.06 0.12 0.25 0.5 1 2 4 8 16 &gt;16</td>
<td>Candida species: 100 100 100 100 100 100 100 100 100 100 100</td>
<td>Candida species: 100 100 100 100 100 100 100 100 100 100 100</td>
</tr>
<tr>
<td>AND</td>
<td>&lt;=0.008 0.015 0.03 0.06 0.12 0.25 0.5 1 2 4 8 16 &gt;16</td>
<td>Candida species: 100 100 100 100 100 100 100 100 100 100 100</td>
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</tr>
</tbody>
</table>

CONCLUSION

This evaluation indicates that the Sensititre YeastOne colorimetric MICs for micafungin and anidulafungin is equivalent to the CLSI M27 BMD, and is a potential method for susceptibility testing of MF and AND.

REFERENCES
