with indistinguishable resistance plasmids and indicates a transfer of such strains from animal to meat products, e.g. during slaughtering.

The characterization and comparison of plasmids in this study support the theory of epidemic spread of plasmids being the primary mechanism for dissemination of β-lactamase genes and the existence of a gene reservoir in food products, especially imported food products, that potentially can be transferred via the food chain to humans.

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Transparency declarations

None to declare.

References


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ME1036, a novel carbapenem, with enhanced activity against clinical isolates causing bacteraemic community-acquired pneumonia

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Keywords: Streptococcus pneumoniae, MRSA, respiratory, susceptibility

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Sir,

ME1036 is a novel investigational parenteral carbapenem with potent in vitro activity against many Gram-positive and Gram-negative pathogens, and improved activity over existing carbapenems against Haemophilus influenzae, Staphylococcus aureus, Enterococcus faecalis, Streptococcus pyogenes, Streptococcus agalactiae and Streptococcus pneumoniae.1–3 ME1036 is active against resistant isolates of many species, including extended-spectrum β-lactam (ESBL)-producing Enterobacteriaceae, β-lactamase-produces H. influenzae,1 methicillin-resistant S. aureus (MRSA),2,3 and penicillin-resistant S. pneumoniae.4

A recent study confirmed the excellent in vitro activity of ME1036 against multidrug-resistant clones of S. pneumoniae involved in severe invasive disease and indicated a potential role for ME1036 in the treatment of hospitalized patients with severe respiratory tract infections.5 In this current study, we evaluated the activity of ME1036 and comparators against clinical blood culture isolates from patients with bacteraemic community-acquired pneumonia (CAP) requiring hospitalization. These same isolates had previously been used to investigate the activity of cefaroline.6

The following isolates from various worldwide locations between 2000 and 2006 were investigated: 1007 S. pneumoniae, 119 H. influenzae, 164 S. aureus, 38 S. pyogenes and 9 Moraxella catarrhalis. MICs were determined using CLSI broth microdilution methodology.7,8 Susceptibility categories were determined for most antimicrobials using CLSI breakpoints.8,9 Tigecycline susceptibilities were categorized using US Food and Drug Administration (FDA)-approved breakpoints,10 which, amongst the isolates included in this study, are available for susceptible or non-susceptible S. aureus only.

Summary MIC data for ME1036 are shown in Table 1. Like meropenem, ME1036 activity was not affected by the presence of β-lactamase in H. influenzae or M. catarrhalis (meropenem MIC90 0.12 mg/L for β-lactamase-positive and β-lactamase-negative H. influenzae, and 0.06 mg/L for β-lactamase-positive M. catarrhalis). ME1036 retained activity against MRSA, unlike meropenem (MIC90 128 mg/L) and other β-lactam antibiotics tested (ceftriaxone MIC90 ≥256 mg/L, cepfepime MIC90 ≥128 mg/L and amoxicillin/clavulanate MIC90 ≥32 mg/L). Against MRSA, ME1036 demonstrated MIC results similar to those shown by linezolid (both having MIC90 values of 2 mg/L), but both were less potent than tigecycline (MIC90 = 0.5 mg/L). ME1036 was the most active agent of those tested against pneumococci, with 90% of penicillin-susceptible isolates having an MIC of ≤0.008 mg/L. The MIC90 of ME1036 was 0.06 mg/L against penicillin-resistant pneumococci. All S. pyogenes were highly susceptible to ME1036.

These data show that ME1036 is an enhanced-spectrum β-lactam with excellent activity against CAP isolates causing serious invasive infections, including MRSA and other β-lactam-resistant strains. The results of the present study confirm and extend previous findings for ME1036 as reported by others.1–4 ME1036 exhibits a spectrum of in vitro activity that suggests it has the potential to be a useful addition to the treatment options for serious hospitalized CAP patients.
Table 1. Summary MIC data for ME1036

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>MIC (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min</td>
</tr>
<tr>
<td>β-Lactamase-negative H. influenzae (n=94)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>β-Lactamase-positive H. influenzae (n=25)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>β-Lactamase-positive M. catarrhalis (n=9)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>Methicillin-resistant S. aureus (n=28)</td>
<td>0.12</td>
</tr>
<tr>
<td>Methicillin-susceptible S. aureus (n=136)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>Penicillin-susceptible S. pneumoniae (n=762)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>Penicillin-intermediate S. pneumoniae (n=97)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>Penicillin-resistant S. pneumoniae (n=148)</td>
<td>&lt;0.008</td>
</tr>
<tr>
<td>S. pyogenes (n=38)</td>
<td>≤0.008</td>
</tr>
</tbody>
</table>

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Transparency declarations

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References


Boropinic acid, a novel inhibitor of Helicobacter pylori stomach colonization

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Keywords: H. pylori, chemotherapy, prenyloxycinnamic acid

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