Comparative Analysis of the Bactericidal Activities of Friulimicin B, Daptomycin, Tigecycline, and Vancomycin against Difficult to Treat Isolates of *S. aureus* and *S. pneumoniae*

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Revised Abstract

Background: *S. aureus* is a *coagulase-positive* staphylococcal bacterium with a wide range of pathogenic properties. The strains were stored frozen at –80°C in a volume of 100 µl. MIC testing was done using a microdilution method according to CLSI (formerly NCCLS) guideline.

**Methods**

- **Test strains and susceptibility to standard drugs**
  - Time-kill experiments were performed with the following panel of 6 strains:
    - Staphylococcus aureus (Sa) ATCC 29213: Methicillin-susceptible (MSSA) wild type strain for resistance testing (vancomycin-, linezolid- and ciprofloxacin-susceptible)
    - Staphylococcus aureus (Sa) ATCC 39593: Methicillin-resistant (MRSA) reference strain, (vancomycin-, linezolid- and ciprofloxacin-susceptible)
    - Staphylococcus aureus (Sa) VISA Mu50: Vancomycin-intermediate (VISA), methicillin-resistant (MRSA) strain (vancomycin-susceptible, linezolid- and ciprofloxacin-resistant)
    - Staphylococcus aureus (Sa) VISA Ma50: Vancomycin-intermediate (VISA), methicillin-resistant clinical isolate (vancomycin-intermediate, linezolid-susceptible, ciprofloxacin-resistant)
    - Streptococcus pneumoniae (Sp) ATCC 49619: Reference strain, clinical isolate, (penicillin-, vancomycin- and linezolid-susceptible)
    - Streptococcus pneumoniae (Sp) Bay 19397: Fluoroquinolone resistant laboratory strain (penicillin-resistant, vancomycin- and linezolid-susceptible, ciprofloxacin-resistant, gyrB mutation)

- **Results and Discussion**
  - The strains were stored frozen at –80°C in a volume of 100 µl.
  - MIC testing was done using a microdilution method according to CLSI (formerly NCCLS) guideline.
  - The single point kill rates calculated for FRI clearly demonstrate that the kill rates increase concentration dependently. The viable counts and thus the kill rates, too, of two strains only, *S. pneumoniae* ATCC 49619 and *S. pneumoniae* 19397 were independent of concentration.
  - The single point kill rates calculated for DAP increase concentration dependently for all strains tested.
  - The two strains only, *S. pneumoniae* ATCC 49619 and *S. pneumoniae* 19397 were independent of concentration.

**References**


Conclusions

- The concentration-dependent bactericidal activity of FRI against selected difficult to treat or MDR *S. aureus* and *S. pneumoniae* is independent of methicillin-, vancomycin-, linezolid-, quinolone-, penicillin-, or macrolide resistance.
- The pronounced bactericidal activity of FRI as opposed to the moderate activity of DAP at low drug concentrations may be of clinical relevance.

**Literature**


**Tables**

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<thead>
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<th>Organism</th>
<th>MIC mg/L</th>
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<th>DAP</th>
<th>VAN</th>
<th>TIG</th>
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</tbody>
</table>

**Fig. 1** Friulimicin B

Calculated single point kill rates (Table 2)

- The single point kill rates calculated for FRI clearly demonstrate that the kill rates increase concentration dependently. The viable counts and thus the kill rates, too, of two strains only, *S. pneumoniae* ATCC 49619 and *S. pneumoniae* 19397 were independent of concentration.
- The single point kill rates calculated for DAP increase concentration dependently for all strains tested.
- The two strains only, *S. pneumoniae* ATCC 49619 and *S. pneumoniae* 19397 were independent of concentration.