Staphylococcus aureus is a cause of infections in hospitals and other health-care settings in the United States and has developed resistance to a broad-spectrum of antibiotics commonly used to treat it. Wound site infections including surgical site infections caused by S. aureus remain a major source of morbidity and mortality (2).

Patients usually become rapidly colonized with S. aureus from the exogenous environment or their own skin flora as the source of infection. E-101 is a novel drug product developed for topical/local application and contains 2 enzymes against pathogens: porcine myeloperoxidase (MPO) and glucuronidase (USP) from Aspergillus Niger. It is prepared from 2 different aqueous solutions, an enzyme solution, and a substrate solution, which are packaged in separate vials. The enzyme solution contains the enzymes MPO and GO, with selected amino acids formulated in a phosphate buffer. The substrate solution contains glucose (dextrose, USP) in the same concentration and reagents as the enzyme solution. E-101 provides the following modes of action: • Overall, E-101 was highly active against all phenotypes of S. aureus with a MIC90 of 0.03 µg/ml (Table 1). MIC90 for E-101 were 4 two-fold dilutions more potent than Mupirocin (0.12 µg/ml). • The MIC distribution (%) for all phenotypes shows that E-101 was highly active and was 2- to 8-fold dilutions more potent than mupirocin (Figure 4). • Elevated MICs to mupirocin (Figure 2-4) were observed in 1 MSSA strain (>32 µg/ml) and 2 VISA strains (4 and >32 µg/ml), and 1 VISA/VSR strain (4 µg/ml). Comparably MIC for these strains to E-101 was 0.015 to 0.03 µg/ml. • The MIC distribution (%) for E-101 against all phenotypes is shown in Figure 5. The mean MIC was 0.015 µg/ml.

In this study, we confirmed the potent anti-staphylococcal activity of E-101 to several strains of S. aureus (Table 2). MIC distribution histograms showed that the MIC range for E-101 is very narrow for all S. aureus phenotypes compared to mupirocin. E-101 shows promise as a topical agent for managing complicated and uncomplicated skin and soft tissue infections.

<table>
<thead>
<tr>
<th>MIC (µg/ml)</th>
<th>E-101</th>
<th>Mupirocin</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSA (n=45)</td>
<td>0.015 0.03 0.12 0.25 1 4 8 16 32 &gt;32</td>
<td>≤ 0.03-32</td>
</tr>
<tr>
<td>MRSA (n=45)</td>
<td>0.015 0.03 0.06 0.12 0.25 1 2 4 8 16 32 &gt;32</td>
<td>≤ 0.03-32</td>
</tr>
<tr>
<td>VISA/VRSA (n=4)</td>
<td>0.03 0.06 0.12 0.25 1 8 16</td>
<td>≤ 0.03-32</td>
</tr>
</tbody>
</table>

REFERENCES

RESULTS
- E-101 was highly active against all phenotypes of S. aureus with a MIC90 of 0.03 µg/ml (Table 1). MIC90 for E-101 were 4 two-fold dilutions more potent than Mupirocin (0.12 µg/ml).
- The MIC distribution (%) for all phenotypes shows that E-101 was highly active and was 2- to 8-fold dilutions more potent than mupirocin (Figure 4).
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CONCLUSION
- In this study, we confirmed the potent anti-staphylococcal activity of E-101 to several strains of S. aureus.
- MIC distribution histograms showed that the MIC range for E-101 is very narrow for all S. aureus phenotypes compared to mupirocin.
- E-101 shows promise as a topical agent for managing complicated and uncomplicated skin and soft tissue infections.