In Vitro Activity of Lefamulin Against Bacterial Pathogens Causing Community-Acquired Bacterial Pneumonia: SENTRY Surveillance 2017–2018 Results From The United States

Susanne Paukner\textsuperscript{1}, S. J. Ryan Arens,\textsuperscript{2} Steven P. Gelone,\textsuperscript{3} Helio S. Sader\textsuperscript{2}

\textsuperscript{1}Nabriva Therapeutics GmbH, Vienna, Austria; \textsuperscript{2}JMI Laboratories, North Liberty, IA, USA; \textsuperscript{3}Nabriva Therapeutics US, Inc., King of Prussia, PA, USA

INTRODUCTION & PURPOSE

Increasing rates of antimicrobial resistance, combined with increasing safety concerns surrounding current treatments, have driven a recent push to develop new therapies. Lefamulin (LEF) is the first pleuromutilin class antibiotic approved for intravenous (IV) and oral use, with the potential to significantly expand the clinician’s antibiotic armamentarium. LEF demonstrated activity against methicillin-resistant \textit{Staphylococcus aureus} (MRSA), which is among the most common pathogens that cause community-acquired bacterial pneumonia (CABP), and is usually treated with vancomycin, \textit{tetracyclines}, or \textit{furanones}.\cite{13}

SENTRY Antimicrobial Surveillance Program (AMSP) data show that MRSA accounts for \textit{71.5\%} of all CABP cases, with community-acquired \textit{Streptococcus pneumoniae} (CAP) responsible for \textit{22.1\%} of all cases. Of the pneumococcal isolates, \textit{52.2\%} were penicillin-resistant.\cite{12}

\textit{S. pneumoniae} is one of the leading causes of CAP, where the majority of isolates have been shown to be resistant to \textit{penicillin} and \textit{tetracyclines}.\cite{12,15} Resistance to \textit{tetracyclines} and \textit{penicillins} is \textit{increasing}\textsuperscript{10} in various countries. In 2017–2018, \textit{penicillin} resistance was observed in \textit{45.6\%} and \textit{36.8\%} of \textit{S. pneumoniae} isolates, respectively, and \textit{tetracycline} resistance was \textit{20.4\%}, whereas they were largely susceptible (>85\%) to the tested \textit{cephalosporins} and \textit{trimethoprim-sulfamethoxazole} (35.3\% resistant; Table 4).\cite{14} In Vitro Activity of Lefamulin Against Bacterial Pathogens

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Lefamulin (µg/mL)</th>
<th>Comparator (µg/mL)</th>
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<tbody>
<tr>
<td>\textit{S. pneumoniae}</td>
<td>0.06–&gt;4</td>
<td>0.06–4</td>
</tr>
<tr>
<td>\textit{S. aureus}</td>
<td>≤0.25</td>
<td>0.12–&gt;2</td>
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<tr>
<td>\textit{H. influenzae}</td>
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**Table 1. Activity of Lefamulin and Comparators Against \textit{S. pneumoniae}**

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**Table 2. Activity of Lefamulin and Comparators Against Drug-Resistant \textit{S. pneumoniae}**

- **Lefamulin demonstrated in vitro activity against both \textit{S. pneumoniae} and \textit{S. aureus} not usually susceptible to other classes of antibiotics.**
- **LEF demonstrated in vitro activity against MRSA, not usually susceptible to \textit{vancomycin} and \textit{tetracyclines}.**
- **LEF was highly active against \textit{S. pneumoniae} with a minimum inhibitory concentration (MIC) of \textit{0.015–0.25 µg/mL} (range of MIC\textsuperscript{87.0\%}).**
- **LEF demonstrated in vitro activity against \textit{tetracyclines} (20.4\%), whereas they were largely susceptible (>85\%) to the tested \textit{cephalosporins} and \textit{trimethoprim-sulfamethoxazole} (35.3\% resistant; Table 4).**

**Table 3. Activity of Lefamulin and Comparators Against \textit{S. aureus}**

**Table 4. Activity of Lefamulin and Comparators Against MRSA**

**RESULTS**

- **LEF demonstrated in vitro activity against \textit{S. pneumoniae} (MIC\textsuperscript{87.0\%}) and \textit{S. aureus} (MIC\textsuperscript{87.0\%}) not usually susceptible to other classes of antibiotics.**
- **LEF demonstrated in vitro activity against MRSA, not usually susceptible to \textit{vancomycin} and \textit{tetracyclines}.**
- **LEF was highly active against \textit{S. pneumoniae} with a minimum inhibitory concentration (MIC) of \textit{0.015–0.25 µg/mL} (range of MIC\textsuperscript{87.0\%}).**
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**Table 4. Activity of Lefamulin and Comparators Against MRSA**

**CONCLUSIONS**

- **LEF demonstrated in vitro activity against its contemporary (2017–2018) CABP pathogens collected in the USA for patients with respiratory tract infections, in both hospitalized and non-hospitalized patients with pneumonia.**
- **LEF activity was comparable to the most common antimicrobials used to treat CABP or was superior to other antibiotics in vitro.**

**REFERENCES**

3. Sader HS, et al. \textit{Infect Dis Week} 2019; October 2–6, Washington, DC, USA
7. Sader HS, et al. \textit{ID Week} 2019: October 2–6, Washington, DC, USA