Antimicrobial Activity of a New Fluoroketolide (CEM-101) Tested Against Streptococcus pneumoniae Tested by the SENTRY Surveillance Program (2008-2009)

MATERIALS AND METHODS

Materials and Methods

Bacterial Strain Collection: A total of 1,737 (USA, Latin America [LA], and Europe) S. pneumoniae isolates were tested during 2008 and 2009, respectively. Only consecutively sequenced isolates were included in the study. Strains were identified by the submitting laboratories with confirmation performed by the central monitoring laboratory (JMI Laboratories, North Liberty, Iowa, USA).

Susceptibility Test Methods: All isolates were tested for susceptibility by broth microdilution methods as described in Clinical and Laboratory Standards Institute (CLSI) recommendations (M07-A8, 2009). Susceptibility testing was performed using broth microdilution panels manufactured by TREK Diagnostics Systems (Cleveland, Ohio, USA). Isolates were tested in Mueller-Hinton broth supplemented with 5-5% lysed horse blood. Validation of the minimum inhibitory concentration (MIC) values was performed by concurrent testing of CLSI-recommended (M100-S20-U, 2010) and EUCAST criteria, when available.

Results

- During 2008 and 2009, 99.7% and 99.9% of the isolates were tested during 2008 and 2009, respectively. Only consecutively sequenced isolates were included in the study. Strains were identified by the submitting laboratories with confirmation performed by the central monitoring laboratory (JMI Laboratories, North Liberty, Iowa, USA).

- **Susceptibility Testing:** All isolates were tested for susceptibility by broth microdilution methods as described in Clinical and Laboratory Standards Institute (CLSI) recommendations (M07-A8, 2009). Susceptibility testing was performed using broth microdilution panels manufactured by TREK Diagnostics Systems (Cleveland, Ohio, USA). Isolates were tested in Mueller-Hinton broth supplemented with 5-5% lysed horse blood. Validation of the minimum inhibitory concentration (MIC) values was performed by concurrent testing of CLSI-recommended (M100-S20-U, 2010) and EUCAST criteria, when available.

- **Results:**
  - **Erythromycin/clindamycin-R** was 36.3/20.0% in 2008 and 34.0/18.1% in 2009. Linezolid and vancomycin showed solithromycin MIC results at 1 µg/mL (CLSI breakpoint for S. pneumoniae) among the most active antimicrobials tested against contemporary strains.
  - **Telithromycin** was highly active against S. pneumoniae, with a MIC90 value of 0.03 µg/mL, compared to strains that were susceptible to clindamycin.
  - **Solithromycin** was the most active agent against isolates non-susceptible to both erythromycin and clindamycin, with an MIC90 value of 0.03 µg/mL, compared to clindamycin.

- **Comparative Evaluation:**
  - **Solithromycin** was the most active agent against isolates non-susceptible to both erythromycin and clindamycin, with an MIC90 value of 0.03 µg/mL, compared to clindamycin.
  - **Solithromycin** was significantly more active than telithromycin against S. pneumoniae, with a MIC90 value of 0.03 µg/mL, compared to clindamycin.
  - **Solithromycin** was comparable or superior to telithromycin and currently marketed agents (79.5% and 86.1%, respectively) against strains non-susceptible to both erythromycin and clindamycin.

- **Conclusions:**
  - **Solithromycin** was the most active antimicrobial agent against S. pneumoniae, with the highest MIC90 value of 0.03 µg/mL, compared to all other agents tested.
  - **Solithromycin** was the most active agent against S. pneumoniae isolates non-susceptible to both erythromycin and clindamycin, with a MIC90 value of 0.03 µg/mL, compared to clindamycin.
  - **Solithromycin** was significantly more active than telithromycin against S. pneumoniae, with a MIC90 value of 0.03 µg/mL, compared to clindamycin.
  - **Solithromycin** was comparable or superior to telithromycin and currently marketed agents (79.5% and 86.1%, respectively) against strains non-susceptible to both erythromycin and clindamycin.