**Materials and Methods**

**Methods:** The in vitro activity of CEM-101 was compared with that of telithromycin, azithromycin, levofloxacin and doxycycline against a total of 410 Legionella spp. by a standard agar dilution procedure using buffered yeast extract agar. The species tested included L. pneumophila serogroups 1 to 12 (300 isolates), L. dumofii (30), L. micdadei (30) and L. longbeachae (25).

**Results:** Against the L. pneumophila strains tested, CEM-101 (MIC ≤ 0.016 mg/L) was more active than telithromycin (MIC ≤ 0.06 mg/L), azithromycin (MIC ≤ 0.25 mg/L), erythromycin (MIC ≤ 0.5 mg/L) and doxycycline (MIC ≤ 1 mg/L). CEM-101 was as active as levofloxacin (MIC ≤ 0.12 mg/L) against L. pneumophila. CEM-101 was less active against L. pneumophila serogroup 1, 2, 3, 4, 5, and 6 strains (MIC ≤ 0.016 mg/L) than L. pneumophila serogroup 7, 8, 9, and 12 strains (MIC ≤ 0.008 mg/L). Against L. micdadei and L. dumofii, erythromycin (MIC ≤ 1 mg/L), doxycycline (MIC ≤ 1 mg/L) and azithromycin (MIC ≤ 0.25 mg/L) were less active than CEM-101 (MIC ≤ 0.12 mg/L) and telithromycin (MIC ≤ 0.12 mg/L). Against L. longbeachae, CEM-101 (MIC ≤ 0.06 mg/L) was more active than levofloxacin (MIC ≤ 0.12 mg/L), telithromycin (MIC ≤ 0.12 mg/L), azithromycin (MIC ≤ 0.12 mg/L), erythromycin (MIC ≤ 0.5 mg/L) and doxycycline (MIC ≤ 1 mg/L).

**Discrimination of MICs:**

- MICs were determined using the CLSI agar dilution method (2, 3), with replicate plating of the organisms onto a series of agar plates of increasing concentrations from 0.004 mg/L to 64 mg/L.
- Buffered yeast extract (BYE) was used as the medium against Legionella strains.
- Staphylococcus aureus ATCC25923, Pseudomonas aeruginosa ATCC27853 and Legionella pneumophila ATCC33152 have been included as controls.

**Discussion**

- **CEM-101 (MIC90 0.016 mg/L) was significantly more potent than the most commonly used drugs for the treatment of Legionella, such as erythromycin and azithromycin.**
- Among the antimicrobial agents tested, levofloxacin (MIC90 0.016 mg/L) was the only antimicrobial agent that was comparable to CEM-101 against Legionella species.
- **Against L. pneumophila, CEM-101 (MIC90 0.016 mg/L) was significantly more active than azithromycin (MIC90 0.25 mg/L) and doxycycline (MIC90 1 mg/L) and slightly more active than telithromycin (MIC90 0.06 mg/L).**
- L. pneumophila serogroup 1 was more resistant to CEM-101 (MIC90 0.3 mg/L) than other L. pneumophila serogroups.
- The activity of CEM-101 against L. pneumophila serogroup 1 was particularly interesting, in that this serogroup is the most resistant strain to erythromycin (MIC90 1 mg/L) and most common strain isolated from nosocomial or acquired respiratory tract infections.

- **The activity of CEM-101 against Legionella other than pneumophila was significantly more active than levofloxacin, telithromycin and doxycycline (MIC90 0.016 mg/L) compared to CEM-101.**

**Conclusion**

- **CEM-101 should be a promising agent for the treatment of lower respiratory tract infections caused by Legionella spp.**
- **Clinical studies should undertaken to evaluate the in vivo effectiveness of this new antimicrobial agent.**

**References**

2. Performance standards for antimicrobial susceptibility testing: 18th Informational Supplement; M100-S18, Clinical and Laboratory Standards Institute (CLSI), Wayne, PA, January 2008)