

Antimicrobial Characterization of CEM-101: Activity Against 331 Respiratory Tract Pathogens Including Multidrug-Resistant Pneumococcal Serogroup 19A (MDR-19A) Isolates

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Background:

CEM-101 (CEM), a novel macrolide-ketolide, has a potent activity against bacterial pathogens susceptible (S) or resistant (R) to other MLS_B-ketolide agents. Projected for use in therapy of respiratory tract infections (RTI), CEM was tested against contemporary RTI isolates.

Methods:

A worldwide sample of organisms included *S. pneumoniae* (SPN; 168, 59.3% erythromycin [ERY]-R and 18 MDR-19A strains), *M. catarrhalis* (MCAT; 21, 11 β -lactamase[+]), *H. influenzae* (HI; 100, 48 β -lactamase[+]), *H. parainfluenzae* and *H. haemolyticus* (12) and *L. pneumophila* (LPN; 30). All S tests were by reference CLSI methods (M7-A7, M100-S18) and breakpoints per CLSI (2008) for comparison agents such as azithromycin (AZ), clarithromycin (CLA), ERY, telithromycin (TEL), clindamycin (CC), Synercid (SYN), levofloxacin (LEV), linezolid, and rifampin (RIF).

Results:

SPN were very S to CEM (MIC₉₀, 0.25 μ g/ml; highest MIC at 0.5 μ g/ml) and CEM was 2- and 8-fold more potent than TEL and CC, respectively. MDR-19A replacement strains were also CEM-S (MIC₉₀, 0.5 μ g/ml). LPN were most S to CEM with all MIC values at \leq 0.015 μ g/ml (TEL MIC₉₀, 0.03 μ g/ml). *Haemophilus* RTI pathogens were less CEM-S (MIC₉₀, CEM/TEL): HI (2/4 μ g/ml) and others (2/4 μ g/ml) with no variations for β -lactamase (+) strains. MCAT CEM-101 MICs were all at \leq 0.5 μ g/ml, equal to TEL.

Organism (no.)	CEM MIC (μ g/ml)			TEL MIC (μ g/ml)		
	50%	90%	Range	50%	90%	Range
SPN (150)	0.015	0.25	\leq 0.008-0.5	0.03	0.5	\leq 0.008-1
MDR-19A (18)	0.25	0.5	0.06-0.5	0.5	1	0.12-1
MCAT (21)	0.12	0.12	\leq 0.008-0.5	0.12	0.25	\leq 0.015-0.5
HI (100)	1	2	0.12-4	2	4	0.25-16
Other Haemophilus (12)	2	2	0.12-2	2	4	0.25-8
LPN (30)	\leq 0.015	\leq 0.015	\leq 0.015	0.03 ^a	0.03 ^a	0.03-0.06 ^a

1. RIF results, not TEL.

Conclusions:

CEM exhibited the widest spectrum/activity against RTI pathogens among the tested MLS_B-ketolide agents (AZ, CLA, ERY, TEL, CC, SYN) and comparable to LEV. All CEM MIC values were \leq 0.5 and \leq 4 μ g/ml for SPN or LPN and HI, respectively; expanded studies should be considered.