CETM-1, a Novel Ketolide: In Vitro Activity Against Resistant Strains of Streptococcus pneumoniae and Haemophilus influenzae

Abstract

Objective: CETM-1 is a promising fluoroketolide that has potent activity against respiratory tract pathogens resistant to other macrolide agents. Its activity against a variety of resistant strains of Streptococcus pneumoniae and Haemophilus influenzae was investigated.

Methods: In vitro activity of CETM-1 was compared with that of telithromycin, azithromycin, erythromycin, levofloxacin and doxycycline against a total of 199 resistant S. pneumoniae and 191 resistant H. influenzae by agar dilution procedures (CLSI, M7-A7, M100-S18). The tested strains included 54 pneumococci erythromycin-resistant (ermB genotype; 107 isolates and mefE genotype; 54) and 323 florfenicol-resistant (gyrA and parC genotype; 38) and also H. influenzae erythromycin-resistant (ermA, B, C genotype; 138) and ciprofloxacin-resistant (gyrA and parC genotype; 53).

Results: Against S. pneumoniae erythromycin-resistant (ermB genotype), the activity of CETM-1 (MIC90 0.25 mg/L) was superior to the macrolides tested: telithromycin (MIC90 4 mg/L), azithromycin (MIC90 8 mg/L), erythromycin (MIC90 64 mg/L) and doxycycline (MIC90 32 mg/L). Against S. pneumoniae erythromycin-resistant (mefE genotype) group, CETM-1 (MIC90 0.25 mg/L) was the most active agent followed by levofloxacin (MIC90 2 mg/L), doxycycline (MIC90 32 mg/L), azithromycin (MIC90 16 mg/L), erythromycin (MIC90 64 mg/L) and doxycycline (MIC90 32 mg/L). Against S. pneumoniae ciprofloxacin-resistant (gyrA and parC genotype) group, CETM-1 (MIC90 0.25 mg/L) was also the most active agent tested followed by telithromycin (MIC90 2 mg/L), azithromycin (MIC90 16 mg/L), erythromycin (MIC90 64 mg/L), and doxycycline (MIC90 32 mg/L). Against H. influenzae erythromycin-resistant (ermA, B, C genotype) strains, CETM-1 (MIC90 1 mg/L) had the most active macrolide tested followed by telithromycin (MIC90 16 mg/L), azithromycin (MIC90 32 mg/L) and erythromycin (MIC90 64 mg/L). Against H. influenzae ciprofloxacin-resistant (gyrA and parC genotype) group, CETM-1 (MIC90 2 mg/L) was slightly more active than telithromycin (MIC90 4 mg/L) and levofloxacin (MIC90 8 mg/L).

Conclusions: These data confirm the interesting activity of the new fluoroketolide CETM-1 against resistant Streptococcus pneumoniae and Haemophilus influenzae.