

# *In vitro* activity of Solithromycin (CEM-101) among azithromycin resistant and susceptible *Mycoplasma genitalium* strains.

## Abstract 1603

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**Objectives:** *Mycoplasma (M.) genitalium* is a well-established and important cause of sexually transmitted infections (STIs). Treatment with 1 g single dose azithromycin as for *Chlamydia trachomatis* infections leads to high-level macrolide resistance in the 5-15% of cases where eradication fails. Moxifloxacin is currently the only second-line drug, but multi-drug resistant strains of *M. genitalium* are emerging. In this study, we evaluated the *in-vitro* activity of the newly developed fluoroketolide solithromycin (CEM-101), and compared it to other antimicrobials currently used for treatment of *M. genitalium* infection.

**Methods:** The minimum inhibitory concentrations (MIC) of solithromycin, azithromycin, erythromycin, doxycycline, ciprofloxacin, and moxifloxacin were determined for a collection of 40 *M. genitalium* isolates originating from 38 patients. As growth in cell-free medium was only possible for 34 strains, MICs were determined using a cell culture method where a defined inoculum (by quantitative PCR) was added into a Vero-cell culture containing two-fold dilutions of test-antibiotic. After a three-week incubation period, cells and supernatant were harvested and growth of *M. genitalium* was determined by quantitative PCR. MIC was expressed as the minimal concentration of the test-antibiotic causing a 99% inhibition of growth when compared to the mean of the control cultures grown without antibiotic. A total of 15 strains from 15 patients were macrolide resistant with MICs >16 mg/L for erythromycin.

**Results:** The MIC range of solithromycin was  $\leq 0.001$ -16 mg/L (MIC<sub>50</sub>: 0.001 mg/L and MIC<sub>90</sub> 2 mg/L). For the 25 macrolide susceptible strains, the MICs ranged from  $\leq 0.001$  to 0.002 mg/L (MIC<sub>90</sub>  $\leq 0.001$  mg/L). For the 15 macrolide resistant strains, the MICs ranged from 0.25 to 16 mg/L (MIC<sub>90</sub> 4 mg/L). The antimicrobial activity of solithromycin was significantly superior to that of azithromycin, other macrolides, as well as to the other classes of antibiotics under investigation.

**Conclusion:** These *in-vitro* observations suggest that this new fluoroketolide could be a promising alternative to the currently used treatments of *M. genitalium*. It is tempting to speculate that the significantly high activity of solithromycin would lead to less selection of macrolide resistant *M. genitalium* strains due to a bactericidal effect in therapeutic doses. Whether the activity will be sufficient also for the majority of macrolide resistant *M. genitalium* strains remains to be determined from clinical studies.