Mycobacterium leprae is Susceptible to Solithromycin (CEM-101)

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Solithromycin (CEM-101), a new macrolide-ketolide in clinical development, has been found to be a minimum of 4-fold more active than other macrolides, mainly clarithromycin and azithromycin and 2-4 fold more active than Telithromycin. It is active against a variety of macrolide-resistant pathogenic strains of S. aureus, S. pyogenes, and S. pneumoniae. The efficacy of Solithromycin (CEM-101) against Mycobacterium leprae, the causative agent for leprosy, was investigated in the present study.

Thai-53 isolate of M. leprae, maintained by serial passages in athymic nu/nu mice footpads, was used for all experiments. For axenic testing freshly harvested viable M. leprae were incubated in medium along with different concentrations of the drugs (CEM-101, clarithromycin and rifampin) for 7 days at 33°C. At the end of this incubation drug-treated M. leprae were subjected to radiorespirometry to assess viability based on oxidation of 14C palmitate. For intracellular testing peritoneal macrophages from Swiss mice were infected with freshly harvested viable M. leprae at a MOI of 20:1 for 12 hours. At the end of the infection macrophage cultures were washed free of extracellular bacteria and drugs added at different concentrations and incubated for 3 days at 33°C. At the end of 3 days cells were lysed to obtain the intracellular M. leprae for viability testing by radiorespirometry and staining with viability dyes to assess the extent of membrane damage.

Solithromycin (CEM-101) at 0.15 mg/ml was able to significantly (P<0.001) reduce the viability of M. leprae in both axenic and intracellular cultures when compared to controls. Inhibition by CEM-101 was not statistically different from inhibition obtained with clarithromycin under identical conditions and at the same concentration against the clarithromycin-susceptible M. leprae.

Solithromycin (CEM-101) is effective against M. leprae potentially expanding the drugs available to treat leprosy.