A Novel Pharmacodynamic Model for Gatifloxacin vs. Salmonella typhi in Timed Kill Curves

Oluleye O. Olasehove1, Alan Forrest1, Brent M. Booker1, Patrick F. Smith1, Sujata M. Bhavnani1,2, Paul G. Ambrose1,2

1University at Buffalo School of Pharmacy & Pharmaceutical Sciences and 2Cognigen Corp, Buffalo, NY

INTRODUCTION

Salmonella typhi is a bacteria that causes over 16 million illnesses and 600,000 deaths/yr worldwide. Timely treatment and bacteria eradication reduces morbidity, mortality and the incidence of resistance. Selection of monotherapy often includes fluoroquinolones due to increasing resistance to traditional treatments such as SMP/TMX especially in developing countries. There is a need to optimize fluoroquinolone therapy when used, in order to minimize the development of resistance and improve clinical outcomes.

METHODS

Using a microbial model as a tool for designing optimal regimens, this study evaluated the pharmacodynamics of gatifloxacin against S. typhi. The MICs of the clinical isolate were determined in triplicate following NCCLS criteria.

RESULTS

The maximal effect was a 4.76 Log difference in AUCFU compared to the AUCGC with a Hill’s constant of 1.47 (Fig 2A).

CONCLUSIONS

This approach to pharmacodynamic modeling of different sub-populations & aid in determining regimens which minimize therapeutic failure due to resistance development.