**ABSTRACT**

Objectives: Delafloxacin (DFX) is an investigational Fluoroquinolone with excellent activity against a variety of Gram negative and Gram positive bacteria, including methicillin-resistant Staphylococcus aureus (MRSA), and polymicrobial-resistant S. aureus. We evaluated the in vitro activity of DFX against MRSA from geographically diverse regions.

Methods: In Vitro antimicrobial activity of DFX was determined by broth microdilution (CLSI M07-A12). Isolates consisted of 387 DFX-susceptible MRSA (163 from Europe, 163 from US, 61 from Asia) and 482 DFX-resistant MRSA (163 from Europe, 163 from US, 61 from Asia). Delafloxacin MICs were determined by broth microdilution (CLSI M07-A12). Delafloxacin and comparators were tested against clinical isolates, and susceptibility was determined by the broth microdilution method (CLSI M07-A12). Statistical analysis was performed by using Fisher’s exact test and a standard log-likelihood ratio test.

Results: Delafloxacin MICs were lower than those of levofloxacin (LVX), linezolid (LNZ), daptomycin (DAP), vancomycin (VAN), oxacillin (OXA), clindamycin (CLI), and tigecycline (TIG) against DFX-susceptible MRSA from Europe and US. By region, DFX was more active against MRSA from Europe (n=387) and LVX against MRSA from US (n=163) and Asia (n=61). Delafloxacin MICs were 4× higher among isolates from the United States compared to isolates from Europe or Asia. Delafloxacin MICs were higher than LVX, LNZ, DAP, VAN, OXA, CLI, and ERY against DFX-resistant MRSA from Europe and US. The activity of DFX was also more frequent against MRSA from Asia compared to Europe and US.

Conclusions: Delafloxacin had in vitro activity against MRSA from geographically diverse regions and was highly active against DFX-susceptible MRSA from Europe and US. Delafloxacin MICs were low against DFX-susceptible MRSA from Asia, regardless of region. Delafloxacin was more active against DFX-resistant MRSA from Europe and US compared to Asia. Delafloxacin and LVX were more active against MRSA from the US compared to Europe.

**INTRODUCTION**

Delafloxacin is an investigational broad-spectrum opthalmic QD by excellent antibacterial activity against Gram-negative and Gram-positive organisms, including both methicillin-susceptible S. aureus (MSSA) and MRSA. The chemical structure of delafloxacin is 1,3,5-tricyclic fluoroquinolone 1,3,5-(1H, naphth[1,2,3-cd]pyridine-1,1′,3′-trione) (Figure 1). Delafloxacin is a non-competitive, reversible inhibitor of bacterial topoisomerase IV. Delafloxacin is a novel quinolone with a different mechanism of action than the fluoroquinolones.