**In Vitro Susceptibility of Delafloxacin and Comparators against Clinical Bacterial Isolates in Taiwan**

Sung-Ching Pan*, Jann-Tay Wang

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

**Background:** Delafloxacin is a novel fluoroquinolone with broad-spectrum activity against Gram-positive and Gram-negative bacteria. Unlike other quinolones, its potency increases in acidic environments, which are common at infection sites. This study evaluated the in vitro activity of delafloxacin against recent clinical isolates in Taiwan.

**Methods:** A total of 330 clinical isolates (2020–2024) were collected, including MRSA, *Streptococcus pneumoniae*, and various Gram-negative bacilli. Minimum inhibitory concentrations (MICs) were determined using the broth microdilution method. For MRSA and *Pseudomonas aeruginosa*, susceptibility was also tested at pH 6.0 to simulate acidic conditions.

**Results:** Delafloxacin showed potent activity against Gram-positive pathogens. For MRSA, the MIC90 was 0.06 mg/L in levofloxacin-susceptible strains and 0.5 mg/L in levofloxacin-resistant strains. Notably, in acidic conditions (pH 6.0), delafloxacin MICs for MRSA and *P. aeruginosa* decreased significantly; for levofloxacin-resistant MRSA, the MIC50 dropped from 0.25 mg/L at pH 7.3 to <=0.06 mg/L at pH 6.0. For levofloxacin-resistant *P. aeruginosa*, the MIC50 dropped from 2 mg/L at pH 7.3 to 0.5 mg/L at pH 6.0. Against *S. pneumoniae*, delafloxacin MICs were consistently <=0.06 mg/L.

**Conclusion:** Delafloxacin exhibits excellent in vitro activity against key Gram-positive pathogens, including *S. pneumoniae* and levofloxacin-resistant MRSA. Its enhanced performance in acidic environments suggests it may be particularly effective for treating infections where low pH typically compromises other antibiotics.

Key words: Delafloxacin, MRSA, *Pseudomonas aeruginosa*, pH-dependent activity, Fluoroquinolones, Taiwan.

Conflict of Interest: SC Pan has received research funding from TTY Biopharm Company Limited. The sponsor was not involved in the study design, data collection, analysis, or the decision to submit this abstract for publication.