Contrasting effect of acidic pH on the extracellular and intracellular activities of delafloxacin (DFX) vs moxifloxacin (MXF) towards *S. aureus*

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Abstract

**Background**: In contrast to currently marketed fluoroquinolones (FQ) that are zwitterionic, DFX (1-(6-\(-\)carboxylic acid)) is an anionic compound (pKa's = 0.80 and 5.49), highly active on Gram-positive bacteria. In this context, we have examined the effect of acidic pH on its accumulation in *S. aureus* and in human THP-1 cells, in parallel with its activity against extracellular and intracellular *S. aureus* described in pathophysiological environments, pH 5.5, and results were expressed as the change in the inoculum at 24 h expressed by reference to the total cell protein, as calculated using a conversion factor of 5 µL per mg of cell protein.

**Methods**

- **Bacteria, susceptibility testing, and, extra- and intracellular activity**: *S. aureus* strain ATCC 25923 (0.8-2.4 log\(\pm\)4.7 100.0 ± 9.7 1100.2 ± 3) was examined after 24 h incubation in medium at pH 7.4 vs pH 5.5 containing fixed extracellular concentration of quinolones. All values are means ± SD of 3 independent determinations.

**Conclusions**: DFX displays a markedly improved potency and activity at acidic pH, probably related to its anionic character and weakly increased accumulation in both bacteria and extracellular matrix. This may confer an advantage to DFX in the treatment of staphylococcal infections in territories where pH is acidic.

**References**

2) Burak et al, P-1080, 19th ECOFAD (2009)

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