Effect of pH on the In Vitro Activity of Finafloxacin against Gram-negative and Gram-positive Bacteria

Introduction

Finafloxacin (FIN, Figure 1) is a novel, broad-spectrum fluoroquinolone (FQ) that belongs to a new 6-panamycin subclass. FIN contains a novel base component which confers improved antibacterial activity at slightly acidic pH (pH 5.0 - 6.0) under which other FQs exhibit significantly reduced activity [1]. In addition, FIN exhibited superior activity to comparator FQs against adherent bacteria, in vitro, that was especially notable at low pH [2]. FIN also exhibited superior activity in rodent infection models [3,4] which were tested at pH 5, 6, 7.3, and 8. There were 22 aerobic Gram-negative bacterial isolates of various species and 12 aerobic Gram-positive bacterial isolates of various species, each at pH 5.0 and pH 6.0, 0.125-1 mg/L at pH 7.3 and 0.25-2 mg/L at pH 8.0. FIN was more active than CIP against CIP-S isolates of various aerobic gram-positive and gram-negative bacterial species known to cause gynecological tract infections.

Results and Discussion

The present study was performed to study the effect of the pH on the in vitro activity of FIN and CIP against 100 clinical isolates of various aerobic Gram-negative and Gram-positive bacterial species known to cause gynecological tract infections. The present study was performed to study the effect of the pH on the in vitro activity of FIN and CIP against 100 clinical isolates of various aerobic Gram-negative and Gram-positive bacterial species known to cause gynecological tract infections.

Results are presented in Table 1. Overall, FIN exhibited the highest in vitro activity at acidic conditions, while CIP was most active at pH 7.3 or 8.0. FIN was more active than CIP against CIP-S isolates of all species, except P. aeruginosa. Of these, 95 were susceptible and 36 exhibited reduced susceptibility to CIP. MICs were determined using the CLSI broth microdilution method.

Results are presented in Table 1. Overall, FIN exhibited the highest in vitro activity at acidic conditions, while CIP was most active at pH 7.3 or 8.0. FIN was more active than CIP against CIP-S isolates of all species, except P. aeruginosa. Of these, 95 were susceptible and 36 exhibited reduced susceptibility to CIP. MICs were determined using the CLSI broth microdilution method.

Conclusions

• FIN demonstrated superior activity to CIP under acidic conditions against isolates of all species, except P. aeruginosa for which both drugs showed similar potency under these conditions.

• FIN appears to be a promising new antimicrobial agent for the treatment of infections in acidic environments.

Literature