Drugs 2004; 64 (19): 2235-2236
0012-6667/04/0019-2235/$34.00/0

Prulifloxacin
A Viewpoint by Pietro E. Varaldo

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Prulifloxacin, the prodrug of ulifloxacin, is a broad spectrum fluoroquinolone that is rapidly absorbed and hydrolysed to the active compound ulifloxacin following oral administration.

Compared with other fluoroquinolones, ulifloxacin has the greatest *in vitro* activity (in terms of both the minimum concentration required to inhibit or kill 90% of isolates [MIC_{90} and MBC_{90}]) against Gram-negative bacteria (excluding *Stenotrophomonas* and *Acinetobacter* isolates, but including *Pseudomonas aeruginosa*), and an activity similar to or greater than that of ciprofloxacin and levofloxacin against Gram-positive bacteria. Although several newer fluoroquinolones with greater activity against Gram-positive bacteria and/or anaerobes have been developed, various unexpected toxicity problems (phototoxicity, cardiotoxicity, hepatotoxicity) have eventually limited the clinical utilisation of many of these compounds. Prulifloxacin proved to have no *in vivo* effects on the PR, QT and corrected QT intervals in animals who were administered the drug, a low phototoxic potential, and only a slight interaction with the cytochrome P450 1A1 and 1A2 (theophylline) isoenzymes.

Prulifloxacin has a long elimination half-life, allowing once-daily administration and thus, better patient compliance. Ulifloxacin is predominantly eliminated via the kidneys and in the faeces. It penetrates well into the respiratory tract, with lung/plasma concentration ratios that increase with time, and has a prolonged post-antibiotic effect. Its active penetration into phagocytic cells *in vitro* makes it a candidate to treat infections caused by intracellular pathogens. Prulifloxacin has shown excellent protective effects *in vivo* in experimental animal models of systemic, respiratory and urinary tract infection. Preliminary data from clinical trials suggest that it is a promising agent for the treatment of acute exacerbations of chronic bronchitis or complicated lower urinary tract infections with once-daily administration, and for acute, uncomplicated lower urinary tract infections with single-dose administration.

Although further studies are required to better define its potential role in antibacterial therapy, the early data on prulifloxacin are very encouraging. Its pharmacodynamic and pharmacokinetic profile and its balanced activity against Gram-negative and Gram-positive bacteria are expected to ensure an effective therapeutic activity combined with a good safety profile. ▲