Is Fosfomycin a Potential Treatment Alternative for Multidrug-Resistant Gram-Negative Prostatitis?


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**BACKGROUND:** Multidrug-resistant gram-negative bacterial (MDR-GNB) infections of the prostate are an increasing problem worldwide, particularly complicating transrectal ultrasound (TRUS)-guided prostate biopsy. Fluoroquinolone-based regimens, once the mainstay of many protocols, are increasingly ineffective. Fosfomycin has reasonable in vitro and urinary activity (minimum inhibitory concentration breakpoint ≤64 µg/mL) against MDR-GNB, but its prostatic penetration has been uncertain, so it has not been widely recommended for the prophylaxis or treatment of MDR-GNB prostatitis.

**METHODS:** In a prospective study of healthy men undergoing a transurethral resection of the prostate for benign prostatic hyperplasia, we assessed serum, urine, and prostatic tissue (transition zone [TZ] and peripheral zone [PZ]) fosfomycin concentrations using liquid chromatography-tandem mass spectrometry, following a single 3-g oral fosfomycin dose within 17 hours of surgery.

**RESULTS:** Among the 26 participants, mean plasma and urinary fosfomycin levels were 11.4 ± 7.6 µg/mL and 571 ± 418 µg/mL, 565 ± 149 minutes and 581 ± 150 minutes postdose, respectively. Mean overall prostate fosfomycin levels were 6.5 ± 4.9 µg/g (range, 0.7-22.1 µg/g), with therapeutic concentrations detectable up to 17 hours following the dose. The mean prostate to plasma ratio was 0.67 ± 0.57. Mean concentrations within the TZ vs PZ prostate regions varied significantly (TZ, 8.3 ± 6.6 vs PZ, 4.4 ± 4.1 µg/g; P = .001). Only 1 patient had a mean prostatic fosfomycin concentration of <1 µg/g, whereas the majority (70%) had concentrations ≥4 µg/g.

**CONCLUSIONS:** Fosfomycin appears to achieve reasonable intraprostatic concentrations in uninflamed prostate following a single 3-g oral dose, such that it may be a potential option for prophylaxis pre-TRUS prostate biopsy and possibly for the treatment of MDR-GNB prostatitis. Formal clinical studies are now required.