In vitro activity of fenticonazole against Candida and bacteria vaginal isolates as determined by mono- or dual-species testing assay

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Background: Candida vaginitis affects up to 75% of women at least once in their lifetime, with persistent, refractory and debilitating vaginal infections. While Candida vaginitis may require a longer therapy with topical azoles, Candida and bacterial mixed vaginal infections require the use of concomitant antibacterial and antifungal treatments. Thus, fenticonazole may be a topical alternative to multi-agent antimicrobial therapy for mixed vaginal infections. We first investigated the dynamics of fenticonazole-induced killing in mono-species assays with Candida and bacterial vaginal isolates. We then assessed the fenticonazole killing activity in dual-species assays where mixed cultures of C. albicans with either Staphylococcus aureus, Streptococcus agalactiae or Escherichia coli were evaluated.

Materials/methods: We determined the in vitro activity of fenticonazole against 318 vaginal isolates of Candida and bacterial species, and we selected 28 isolates for time-kill curve studies. For pure culture assays, we inoculated aliquots of exponentially growing isolates’ cultures in RPMI 1640 or Mueller-Hinton medium with or without (control) antifungal. Similarly, for mixed culture assays, we inoculated aliquots of exponentially growing isolates’ cultures from each of two species in Mueller-Hinton medium (ratio 1:1). The fenticonazole concentrations tested were equivalent to 0.5×, 1×, 2×, 4×, and (only for Candida isolates) 8× the MIC value, as determined for each species’ isolate.

Results: Overall, fenticonazole MICs were low. At concentration equal to 4× MIC, fenticonazole reached the 99.9% killing endpoint by ~8 h for S. aureus, S. agalactiae and E. coli; ~16 and ~19 h for C. albicans and C. parapsilosis, respectively; at concentration equal to 8× MIC, by ~20 h for both C. tropicalis and C. glabrata. At concentrations equal to 2× MIC, fenticonazole required ~20 h to reach the above endpoint against mixed C. albicans cultures of S. aureus, S. agalactiae or E. coli as compared to ~17 h for C. albicans.

Conclusions: MIC data reinforce the potent in vitro activity of fenticonazole against Candida and bacterial species. Time-kill data highlight that fenticonazole is microbicidal at supra-MIC concentrations such as those easily achieved in topically treated women’ skin/mucosa surfaces during vaginitis episodes.