

In vitro Antifungal Efficacy of Biguanides and Quaternary Ammonium Compounds against Cleanroom Fungal Isolates

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Abstract

In vitro antifungal activities of three biocides including one biguanide (chlorhexidine) and two quaternary ammonium compounds (benzalkonium chloride and cetrimide) were studied against eight cleanroom fungal isolates by using a microbiological broth dilution technique as per Clinical and Laboratory Standards Institute (CLSI) M38-A guidelines. No data exists on the activity of biocides on pharmaceutical cleanroom fungal isolates. Minimum inhibitory concentrations (MICs) for all three biocides against species of *Aspergillus* and *Penicillium* species ranged between 4 and 16 µg/mL. MICs of *Curvularia*, *Cladosporium*, and *Alternaria* species also showed less than 16 µg/mL. To date, susceptibility breakpoints have not been established for biocides, and this is the first study using the CLSI broth microdilution antifungal susceptibility testing to determine the MIC value of biocides. This study clearly demonstrates that the most frequently isolated micro-organisms from an environmental monitoring program may be periodically subjected to microbroth dilution testing with cleanroom disinfectant agents used in the disinfection program to confirm their sensitivity profile. Further work is needed in this field to increase our understanding of biocides against different fungal isolates and to enable the design of more efficient disinfection and contamination control programs.

LAY ABSTRACT: Increased trend of fungal growth is observed in pharmaceutical and medical device cleanrooms. It is essential to have knowledge of choosing effective disinfectants for minimizing fungal occurrence in cleanrooms. The present study establish minimum cut-offs for specific fungal isolates that are problematic in cleanrooms against commonly used disinfectants (quaternary ammonium compounds and biguanides). Further studies based on this minimum inhibitory concentration of disinfectants, effective time, and cleaning methods could prevent fungal occurrence.

[Microbroth dilution techniques](#) [Biocides](#) [Biguanides](#)
[Quaternary ammonium compounds](#) [Fungi](#)

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Articles citing this article

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