Update on the Spectrum of CEM-102 (Fusidic Acid) Against Contemporary Wildtype Bacterial Species Including Mutual Resistance Analysis, and Synergy Testing

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Abstract

Background: Fusidic acid (FA) is a steroidal antimicrobial agent with broad Gram-positive activity (and skin structure infection) which acts by preventing bacterial cell wall synthesis via interacting with translation factor GroEL.

Methods: A collection of 114 wt (%) isolates (140 species) was used to define the contemporary limits of FA spectrum against Gram-positive (GP) and -negative (GN) species. CSLI broth microdilution (BMD) and agar dilution (AD) methods were used. Standard test methods included adding 10% human serum, adjusting the medium pH to 5.5, 6.0, and 8.0 and synergy was assessed by the checkerboard method. Minimal inhibitory concentrations (MICs) were obtained for all organisms.

Results: Against GP FA MIC values ranged from 0.06–32 μg/ml, with greatest potency against S. aureus.

Concerns: A total of 27 GP species were susceptible to fusidic acid with other antimicrobial classes when tested (susceptible).

Conclusions: Fusidic acid is an older antimicrobial agent with continued potential clinical utility against some important bacterial pathogens, including MRSA, especially in the USA.

Materials and Methods

A total of 114 Gram-positive and -negative organisms were susceptible tested against fusidic acid to determine the spectrum of these bacterial isolates. Twenty-seven species of Gram-positive cocci, 20 strains of Gram-positive bacilli, 13 strains from 17 genera groups of Gram-negative non-fermentative bacilli, 23 strains of Clostridium, 13 strains of Enterococcus, 11 strains of Corynebacteria spp, (1) >32

Conclusions: FA demonstrated potent GP activity, especially against the staphylococci. A more limited activity was observed against GN species isolates. Added serum proteins adversely influenced MIC values; however a lower media pH, like seen on injection sites, decreased negative protein binding effects. FA in vitro activity was most improved when combined with RIF.

References

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