

Performance of CEM-102 (Fusidic Acid [FA]) Susceptibility Testing Reagents; Broth Microdilution, Disk Diffusion and Etest Methods.

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Background:

FA is a steroidal antimicrobial agent with significant potencies against Gram-positive species and acts by preventing bacterial protein synthesis via interacting with elongation factor G. FA has been used in clinical practice for more than four decades as an effective multi-route treatment of skin and skin structure infections (SSSI).

Methods:

A total of 778 *S. aureus* isolates were collected from USA (561; 53.8% oxacillin-resistant [OXA-R]) and Canadian (217; 46.5% OXA-R) medical centers with nearly equal numbers selected in each of five 2-year increments from 1997 to 2006. Susceptibility (S) testing was performed according to CLSI broth microdilution (BMD; M07-A8) and disk diffusion (DD; M02-A10) methods. The Etest (AB BIODISK, Solna, Sweden) MIC method was tested using manufacturer's package insert instructions.

Results:

For FA the CLSI BMD MIC method performed well as the reference method. FA was more active against USA *S. aureus* isolates (MIC₉₀, 0.12 µg/ml; 100.0% at ≤0.5 µg/ml) compared to Canadian isolates (MIC₉₀, 0.25 µg/ml; 93.5% at ≤0.5 µg/ml). BMD results were compared by scattergram analyses to zone diameters around commercially available 5- and 10-µg disks. Excellent correlation (r=0.74-0.76) was observed for both disk contents. Comparing the two disks a r=0.97 correlation was noted. Applying a breakpoint of ≤0.5 µg/ml (S) and ≥2 µg/ml (R) for MIC results and ≥21mm (S) and ≤18mm (R) for DD resulted in 99.9% absolute intermethod categorical agreement with only one minor error. BMD versus Etest MIC results (r=0.77) showed 55.4% identical results and agreement at 99.7% ±1 log₂ dilution. A slight trend toward lower MIC results by Etest was observed, 31.2% vs. 13.1% higher.

Conclusions:

The BMD and DD diagnostic S testing reagents performed at an excellent level of intermethod agreement at 99.7-99.9%. The Etest method was an acceptable alternative to either BMD or DD for FA S testing. FA was very active against contemporary North America staphylococci from SSSI, recognized by these test methods.