

Fosfomycin: *in vitro* Activity¹

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Summary

Fosfomycin is a new broad-spectrum antibiotic, discovered in *S. fradiae* fermentation broths. It is bactericidal and inhibits the synthesis of the bacterial cell wall, in gram-positive as well as gram-negative organisms.

In this study the results obtained on the *in vitro* activity of fosfomycin by the disc-plate method, following on one hand the Zimmerman method, and on the other the WHO recommendations, are presented. These results are similar for many organisms, but differ substantially in others, depending on the method used. The number of *Klebsiella-Enterobacter* and indole-positive *Proteus* strains sensitive to fosfomycin is less when the WHO method than when the Zimmerman method is employed; however, the former shows a better correlation to the antibiotic *in vivo* activity.

Following the WHO norms for susceptibility tests, it can be seen that fosfomycin is a broad-spectrum and very active antibiotic against *Staphylococcus*, *Streptococcus*, *N. gonorrhoea*, *N. meningitidis*, *E. coli*, *P. mirabilis*, *S. marcescens*, *Salmonella*, *Shigella*, *P. aeruginosa*, *H. influenzae* and *V. cholerae*, and less active against indole-positive *Proteus* and *Klebsiella-Enterobacter*.

Compared with other antibiotics the *in vitro* fosfomycin activity has a wider spectrum of action than that of penicillins and semisynthetic cephalosporins, and on the other hand, is comparable to gentamicin.

Following the WHO recommendations and using the dilution in agar method, 898 MIC's from different microbial species were made. Keeping in mind that with parenterally administered fosfomycin blood levels greater than 64 µg/ml may be obtained, this value was taken as the critical point for establishing the possibilities of this antibiotic in the clinic. Following this criteria, the cumulative percentages of the MIC obtained with a value lower than 64 µg/ml were: *Staphylococcus*, 97%; *P. mir-*

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abilis, 98%; *S. marcescens*, 99%; *Salmonella-Shigella*, 80%; *E. coli*, 86%; *P. aeruginosa*, 79%; *Streptococcus sp.*, 79%; *N. gonorrhoeae* and *H. influenzae*, 100%; indole-positive *Proteus*, 36%, and *Klebsiella-Enterobacter*, 20%.

Finally, confronting the MIC values with the inhibition zones against the 50- μ g disc, a point curve was obtained to which a regression line with a correlative coefficient of 0.864 was made.