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Antimicrobial activity of trifluoromethyl ketones and their synergism with promethazine

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The antimicrobial effects of 30 trifluoromethyl ketones[**1-30**]were studied on various bacteria. of the ketones,4,4,4-trifluoro-1-phenyl-1,3-butanedione [**10**],1,1,1-trifluoro-3-(4,5-dimethyloxazol-2-yl)-2-propanone[**11**]and1-(2-benzoxazolyl)-3,3,3-trifluoro-2-propanone [**18**] were found to exhibit potent antibacterial activity against the Gram-positive *Bacillus megaterium* and *Corynebacterium michiganese*, but not against Gram-negative bacteria such as *Pseudomonas aeruginosa* and *Serratia marcescens*. Compound **11** and **18** inhibited the *E. coli*. Compound **18** was also effective against yeasts. The combination of promethazine with **18** was significantly synergistic against *E. coli* strains, especially the proton pump deficient mutant. The results suggest that membrane transporters are the target of trifluoromethyl ketones. The inhibition was more marked in the proton pump deficient *E. coli* mutant than in the wild type, which suggested that the antibacterial effect of trifluoromethyl ketones is partly prevented by the proton pump system.