

Antimicrobial Activity of Formylchromones: Detection by a Micro-Scale Method

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We report the antimicrobial activity of formylchromones. These compounds are remote structural analogues of nalidixic acid and quinolone antibiotics, and their activity was investigated by a simple micro-scale method designed for the determination of minimal inhibitory concentrations (MIC) of drug candidates and antibiotics against aerobic bacteria and yeasts. Minimal bactericidal and fungicidal concentrations (MBC and MFC, respectively) were also determined in connection with the MIC determinations. The results obtained were compared with those obtained using classical agar diffusion methodology. In the MIC method, deep-well micro-titration plates are used, covered by silicone sealing mats that allow diffusion of oxygen to the wells. The appropriate broth is pipetted into the wells, followed by a standardized microbial suspension (except for sterile controls) and a dilution series of the test substance or control antibiotic or a mere control solvent. The use of white non-transparent polypropylene plates allows easy visual inspection of microbial growth. For the MBC and MFC methods, samples are taken from all wells that contain a test substance or control antibiotic and do not display growth in the MIC test. The samples are streaked on agar plates, the liquid is allowed to absorb into the agar, and finally the microbes are spread all over the plate with a bent rod. Colony counts are compared with that of the untreated microbial suspension at the beginning of the MIC test. The MIC method is suitable for high-throughput screening.

Key words: Minimal Inhibitory Concentration, Minimal Bactericidal Concentration, Minimal Fungicidal Concentration, High-Throughput Screening Methods