Multicenter Evaluation of a Newly Developed Microdilution Test, BrothMIC, to Determine MICs of Antimicrobial Agents for the Isolates of Mycobacterium tuberculosis.


A newly developed microdilution antimycobacterial susceptibility test, BrothMIC (Kyokuto Pharmaceutical Industrial Co., Ltd., Tokyo, Japan) for the determination of MICs was evaluated. The test method utilizes air-dried microplates containing serially diluted antimicrobial agents and the modified Middlebrook 7H9 broth. The eight antimycobacterial agents tested were rifampin, isoniazid, ethambutol, streptomycin, kanamycin, levofloxacin, sparfloxacin and ciprofloxacin. The test plates were reconstituted by inoculation of 0.2 mL of cell suspensions (6 x 10^5 CFU/mL) and were incubated at 36°C in 5% CO2. The growth endpoints were visually read after 7-day and 10-day incubations. The reproducibility was evaluated with the four reference strains of M. tuberculosis, and were compared with the agar proportion method described in NCCLS M24-A. Of the 1,022 testings of the reference strains, 1,020 (99.8%) of the MICs read after 7-day incubation fell within 3log2 dilutions. The growth endpoints read after 7-day and 10-day incubations gave equal MIC ranges for the respective agents. The results obtained by the BrothMIC for 100 clinical isolates of M. tuberculosis compared well with those determined by the NCCLS method with 95% to 98% agreements, except for ethambutol. These results demonstrate this newly developed test method to be a practical, rapid, quantitative, nonradiometric alternative for the determination of MICs in clinical mycobacteriology laboratories.