**Pseudomonas aeruginosa ATCC 49189**, a New Quality Control Strain for Testing *P. aeruginosa* Susceptibility to the Aminoglycosides

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Received 27 March 1989/Accepted 26 July 1989

Quality control for in vitro antimicrobial susceptibility testing of *Pseudomonas aeruginosa* versus aminoglycosides is improved by *P. aeruginosa* ATCC 49189, which was developed in the Clinical Microbiology Laboratory at St. Paul-Ramsey Medical Center. This strain, used by us for daily testing for the past 6 years, requires MICs that approximate therapeutic concentrations, are midrange in most dilution schemes, and are stable and reproducible through several years of daily use of the drugs.

The organism has been maintained in stock culture at −70°C in 1.5 ml of defibrinated sheep blood in the stock culture collection of the Clinical Microbiology Laboratory at St. Paul-Ramsey Medical Center. This stock culture was used to make annual working cultures which were stored in similar fashion and from which fresh plates were prepared weekly by introduction of a hot inoculating loop for daily subculture for quality control of *P. aeruginosa* susceptibility testing.

Figure 1 illustrates the results of quality control tests for gentamicin, tobramycin, and amikacin with *P. aeruginosa* ATCC 49189 conducted in our laboratory from 1 January 1983 to 1 November 1988. All testing was performed on an MIC 2000 Automatic Inoculator (Dynatech Laboratories, Inc., Alexandria, Va.) with panels manufactured by us on an MIC 2000 96-channel dispenser with 0.1 ml of antibiotic per well as described previously (4). Aminoglycosides were arrayed in small arithmetic increments differing by 1 μg/ml and ranging from 1 to 16 μg/ml for gentamicin and tobramycin and differing by 2 μg/ml and ranging from 2 to 32 μg/ml for amikacin. Other agents were arrayed in twofold-dilution schemes with endpoints determined by the active spectrum of each agent. A total of 16 different lots of approximately 420 panels each were manufactured during the study period. Each panel was sealed with tape and frozen at −70°C until use.

As had been previously demonstrated (4–7), statistical evaluation of repeated MIC determinations for *P. aeruginosa* ATCC 49189 versus gentamicin, tobramycin, and amikacin shows a high degree of single-lot precision and remarkable accuracy in occurrence about the modal value, especially considering the small-increment format. For gentamicin, the mean value for 1,525 tests (Fig. 1A) was 7.20, the standard deviation was 0.83, and the coefficient of variation was 11.51. For the 1,373 tobramycin tests (Fig. 1B), the same statistical parameters were 2.04, 0.23, and 11.21, respectively. For the 1,605 amikacin tests (Fig. 1C), these parameters were 3.12, 0.47, and 17.67, respectively. The disparity in total numbers of tests for the three agents is due to selective data suppression for brief intervals during the study period.

Quality control data for *P. aeruginosa* ATCC 49189 versus various other antipseudomonal agents are portrayed in Table...
FIG. 1. Reproducibility of MICs of gentamicin (A), tobramycin (B), and amikacin (C) against *P. aeruginosa* ATCC 49189. Numbers above histobars are percentages of total tests showing specified MICs.
1. As evidenced by the total number of tests, several agents, including cefotaxime, mezlocillin, and piperacillin, have been tested consistently, while several others, including carbenicillin, ceftazidime, and ciprofloxacin, were introduced later in the study. Ceftazidime and moxalactam were deleted from test panels during the study period. Ceftazidime and piperacillin MICs fell consistently below 1- and 2-μg/ml values, respectively, and thus were off scale in a normal integer or twofold-dilution scheme. For the remaining agents, expected MICs for *P. aeruginosa* ATCC 49189 occurred on scale, closely approximated those for *P. aeruginosa* ATCC 27853, and were acceptable for quality control purposes.

We gratefully thank the Clinical Microbiology Laboratory at St. Paul-Ramsey Medical Center for their support.

**LITERATURE CITED**


<table>
<thead>
<tr>
<th>Twofold dilution</th>
<th>MIC (μg/ml) (% of tests)</th>
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<tbody>
<tr>
<td></td>
<td>Cefotaxime (1,619)*</td>
</tr>
<tr>
<td>+2</td>
<td>32 (0.5)</td>
</tr>
<tr>
<td>+1</td>
<td>16 (9.3)</td>
</tr>
<tr>
<td>0 (mode)</td>
<td>8 (90.1)</td>
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<tr>
<td>−1</td>
<td>4 (0.1)</td>
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<tr>
<td>−2</td>
<td></td>
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* Number of tests.