ANTIMICROBIAL AGENTS AND CHEMOTHERAPY, Feb. 1981, p. 357-358
0066-4804/81/020358-02$02.00/0

Vol. 19, No. 2

In Vitro Susceptibilities of *Aeromonas hydrophila* to 32 Antimicrobial Agents

ROBERT J. FASS* AND JEAN BARNISHAN

Division of Infectious Diseases, Department of Medicine and the Clinical Microbiology Laboratories, The Ohio State University College of Medicine, Columbus, Ohio 43210

Minimal inhibitory concentrations of 32 antimicrobial agents for 20 strains of *Aeromonas hydrophila* were determined by a microdilution method. Moxalactam was the most active drug tested. All strains were also susceptible to clinically achievable concentrations of mecillinam, cefamandole, cefuroxime, cefotaxime, aminoglycosides (except streptomycin), tetracycline, chloramphenicol, and trimethoprim-sulfamethoxazole.

Aeromonas hydrophila is an organism found in natural water sources which occasionally causes human infections. In recent years, it has been recognized as the cause of a variety of serious infections, particularly in compromised hosts, and as a nosocomial pathogen (1, 6, 7). Susceptibilities to antimicrobial agents have varied, but isolates were usually susceptible to chloramphenicol, tetracycline, aminoglycosides, and trimethoprim-sulfamethoxazole and relatively resistant to penicillins, cephalosporins, erythromycin, and polymixins (1, 2, 3-7).

In this study, we tested the susceptibilities of 20 strains of *A. hydrophila* to 32 antimicrobial agents. The isolates were from patients hospitalized in University Hospitals, Columbus, Ohio during the past two years. Minimal inhibitory concentrations were determined by a microdilution method in cation-supplemented Mueller-Hinton broth (Difco Laboratories, Detroit, Mich.), using an inoculum size of approximately 2×10^5 colony-forming units per ml (Fass and Barnishan, Rev. Infect. Dis., in press).

Results are shown in Table 1. Among the β-lactam antibiotics, moxalactam was most active. Mecillinam, cefuroxime, and cefotaxime inhibited all strains in concentrations of 8 μg or less per ml, and cefamandole inhibited all strains in concentrations of 32 μg or less per ml. A previous study (2) indicated that cefoperazone was also active; minimal inhibitory concentrations were 0.13 to 8 μg/ml. Among the aminoglycoside antibiotics, gentamicin was most active. All aminoglycosides except streptomycin inhibited 100% of strains in clinically achievable concentrations. Among the other antimicrobial agents studied, only tetracycline, chloramphenicol, and trimethoprim-sulfamethoxazole were consistently active.

TABLE 1. *In vitro susceptibilities of A. hydrophila to 32 antimicrobial agents*

Antimicrobial agent	Minimal inhibitory concn (μg/ml)		
	Range	50% inhibition	90% inhibition
Penicillin G	64->128	>128	>128
Ampicillin	16->128	>128	>128
Carbenicillin	8->128	>128	>128
Ticarcillin	8->128	>128	>128
Azlocillin	8->128	32	64
Mezlocillin	4->128	8	8
Piperacillin	1->128	4	8
Mecillinam	0.25-4	1	2
Cephalothin	2->128	>128	>128
Cefazolin	4->128	128	>128
Cefamandole	0.25-32	2	8
Cefoxitin	0.5-128	8	32
Cefazaflur	0.5->128	64	>128
Cefuroxime	0.25-8	1	4
Cefotaxime	≤0.06-4	≤0.06	0.25
Moxalactam	≤0.06	≤0.06	≤0.06
Streptomycin	2->64	8	16
Kanamycin	0.5-8	2	8
Gentamicin	0.13-0.5	0.25	0.5
Tobramycin	0.13-2	1	2
Amikacin	0.5-4	2	4
Sisomicin	0.13-1	0.5	1
Netilmicin	0.13-1	0.5	1
Colistin	1->64	4	>64
Tetracycline	0.5-2	1	2
Minocycline	0.5-4	1	4
Doxycycline	0.5-4	1	2
Chloramphenicol	0.5-8	1	4
Erythromycin	8-64	16	32
Clindamycin	≥64	>64	>64
Vancomycin	≥64	>64	>64
TMP-SMZ[a]	2-32	4	8

[a] TMP-SMZ, Total trimethoprim-sulfamethoxazole in a ratio of 1:19.

This study was supported in part by a grant from Eli Lilly and Co., Indianapolis, Ind.

LITERATURE CITED

1. **Davis, W. A., II, J. G. Kane, and V. F. Garagusi.** 1978. Human *Aeromonas* infections: a review of the literature

and a case report of endocarditis. Medicine **57**:267–277.
2. **Fass, R. J.** 1980. In vitro activity of cefoperazone against nonfermenters and *Aeromonas hydrophila*. Antimicrob. Agents Chemother. **18**:483–486.
3. **Jones, R. N., P. C. Fuchs, H. M. Sommers, T. L. Gavan, A. L. Barry, and E. H. Gerlach.** Moxalactam (LY127935), a new semisynthetic 1-oxa-β-lactam antibiotic with remarkable antimicrobial activity: in vitro comparison with cefamandole and tobramycin. Antimicrob. Agents Chemother. **17**:750–756.
4. **Nord, C.-E., T. Wadström, and B. Wretlind.** 1975. Antibiotic sensitivity of two *Aeromonas* and nine *Pseudomonas* species. Med. Microbiol. Immunol. **161**:89–97.
5. **Overman, T. L.** 1980. Antimicrobial susceptibility of *Aeromonas hydrophila*. Antimicrob. Agents Chemother. **17**:612–614.
6. **von Graevenitz, A., and A. H. Mensch.** 1968. The genus *Aeromonas* in human bacteriology. Report of 30 cases and review of the literature. N. Engl. J. Med. **278**:245–249.
7. **Washington, J. A., II.** 1972. *Aeromonas hydrophila* in clinical bacteriologic specimens. Ann. Intern. Med. **76**: 611–614.