Cephalothin Susceptibility as a Potential Marker for the *Aeromonas sobria* Group

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Fifty-four motile *Aeromonas* strains, composing the three currently recognizable species, were tested for susceptibility to cephalothin by broth dilution and disk agar diffusion assays. Cephalothin susceptibility was significantly associated with *Aeromonas sobria* (*P* < 0.001) and may be an additional phenotypic marker useful in the identification of this species.

During the past several years members of the motile *Aeromonas* group have undergone a taxonomic reorganization at the species level. In *Berger's Manual of Systematic Bacteriology* (11), three species of motile aeromonads of clinical significance are recognized, namely, *A. hydrophila*, *A. sobria*, and *A. caviae*. This taxonomic change is supported by DNA-DNA homology studies (13), numerical taxonomy data (7, 12), and core oligosaccharide analysis (14). Members of this group can be differentiated by using a battery of simple biochemical tests (3, 5, 12), and all three species have been recovered from well-documented infectious processes such as sepsis, gastroenteritis, and wound infections (4-6).

Although three species are currently recognized, genetic studies indicate that at least 7 and maybe as many as 12 distinct species exist within the motile *Aeromonas* complex (13; G. R. Fanning, F. W. Hickman-Brenner, J. J. Farmer III, and D. J. Brenner, Abstr. Annu. Meet. Am. Soc. Microbiol. 1985, C116, p. 319). Unfortunately, these additional species are not separable on the basis of biochemical properties and can only be distinguished by DNA-DNA hybridization studies. It is therefore of potential significance to find additional phenotypic markers for the motile *Aeromonas* group, which may eventually aid in the separation of these new genetic clusters. During a study of the MICs of 22 antimicrobial agents against the three *Aeromonas* species (8), we noticed a striking association between cephalothin susceptibility and identification of species as *A. sobria* and have further investigated this observation as a potential marker for this group.

A total of 54 *Aeromonas* isolates were studied (22 *A. hydrophila*, 20 *A. sobria*, and 12 *A. caviae* isolates). Of these isolates, 50 were from a more comprehensive study of antimicrobial susceptibilities (8), and 4 additional strains (2 *A. hydrophila* and 2 *A. caviae*) were recovered from stool specimens and were included in the present study. MICs of cephalothin were determined as previously described, using Unisect MIC Plus (Analytab Products, Plainview, N.Y.). Bacterial susceptibility to cephalothin (30 μg) in disk agar diffusion was determined by the method of Bauer et al. (1).

The results of 54 *Aeromonas* strains tested for susceptibility to cephalothin by MIC and disk diffusion are shown in Fig. 1. Using currently accepted National Committee for Clinical Laboratory Standards breakpoints (9, 10) for broth susceptibility to cephalothin (MIC, ≤8 μg/ml) and for disk agar diffusion (zone size, ≥18 mm), we judged by both methods that 16 (30%) of the 54 strains were susceptible. Susceptibility to cephalothin was distinctly associated with the *A. sobria* group since 14 of 16 (80%) cephalothin-susceptible strains belonged to this species (*P* < 0.001). When a zone size of 20 mm in the disk agar diffusion test as a breakpoint was coupled with MIC results, the sensitivity and specificity of cephalothin susceptibility as additional criteria for identifying the *A. sobria* group were 70 and 93%, respectively.

The results of this study suggest that cephalothin susceptibility may be a useful phenotypic marker for the *A. sobria* group. Since most commercially available microidentification systems cannot distinguish between *A. hydrophila* and *A. sobria*, this test may provide diagnostic and therapeutic implications. However, the species status of each isolate should be definitively determined by using a battery of biochemical tests (3, 11). Several studies have recently suggested that it may be clinically important to distinguish between *A. hydrophila* and *A. sobria*, since the latter species...
has been suggested to be more invasive and hence more virulent (2, 3; J. M. Janda, R. B. Clark, and R. Brenden, Curr. Microbiol., in press). Additionally, since two distinct groups are recognizable with respect to susceptibility to cephalothin, this marker may be useful in distinguishing between different genetic clusters within A. sobria.

LITERATURE CITED