



## Product Information

### Amikacin disulfate salt

Product Number **A 1774**  
Storage Temperature 2-8 °C

### Product Description

Molecular Formula:  $C_{22}H_{43}N_5O_{13} \cdot 2H_2SO_4$   
Molecular Weight: 781.8  
CAS Number: 39831-55-5  
Melting Point: 220-230 °C (with decomposition)<sup>1</sup>  
Specific Rotation: +74.75° (10 mg/ml, water, 22 °C)<sup>1</sup>  
Synonyms: (S)-O-3-amino-3-deoxy- $\alpha$ -D-glucopyranosyl-(1→6)-O-[6-amino-6-deoxy- $\alpha$ -D-glucopyranosyl-(1→4)-N<sup>1</sup>-(4-amino-2-hydroxy-1-oxobutyl)2-deoxy-D-streptomycin disulfate; 1-N-[L(—)-4-amino-2-hydroxybutyryl]kanamycin A disulfate<sup>1</sup>

Amikacin is a semisynthetic, aminoglycoside antibiotic that is derived from kanamycin A. Its range of activity is similar to that of gentamicin. Amikacin has particular activity against many strains of Gram-negative bacteria. It has also been reported to be active against some staphylococci and mycobacteria strains, including *Mycobacterium tuberculosis* and *Nocardia asteroides*. The minimum inhibitory concentration (MIC) range towards the most sensitive organisms has been reported at 0.1 - 8  $\mu$ g/ml.<sup>1,2</sup>

The incubation of arachidonate-enriched rabbit serum with multidrug-resistant strains of *Pseudomonas aeruginosa* in the presence of ceftazidime and amikacin has been studied.<sup>3</sup> Cultures of apical-medial segments of organ of Corti from amikacin-treated rats have been investigated to probe the potential role of growth factors in the survival and differentiation of atypical Deiters' cells and in the stimulation of hair cell regeneration processes *in vitro*.<sup>4</sup> Amikacin treatment has been used in a study of the interactions of cultured C57BL/6 mouse pulmonary epithelial cells and cultured HeLa cells with *Nocardia asteroides* GUH-2.<sup>5</sup>

An LC-ECD method for the analysis of amikacin has been published.<sup>6</sup> An HPCE/fluorescence technique for the detection of amakacin in plasma has been described.<sup>7</sup>

### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

### Preparation Instructions

This product is soluble in water (50 mg/ml), with heat as needed, yielding a clear, colorless to faint yellow solution.

### Storage/Stability

Stock solutions of this product are stable at 0-4 °C for months.

### References

1. The Merck Index, 12th ed., Entry# 426.
2. Martindale The Extra Pharmacopoeia, 31st ed., Reynolds, J. E. F., ed., Royal Pharmaceutical Society (London, UK: 1996), pp. 169-170.
3. Giamarellos-Bourboulis, E. J., et al., *Ex vivo* synergy of arachidonate-enriched serum with ceftazidime and amikacin on multidrug-resistant *Pseudomonas aeruginosa*. *J. Antimicrob. Chemother.*, **51(2)**, 423-426 (2003).
4. Daudet, N., et al., Transforming growth factor- $\alpha$ -induced cellular changes in organotypic cultures of juvenile, amikacin-treated rat organ of corti. *J. Comp. Neurol.*, **442(1)**, 6-22 (2002).
5. Beaman, B. L., and Beaman, L., Filament tip-associated antigens involved in adherence to and invasion of murine pulmonary epithelial cells *in vivo* and HeLa cells *in vitro* by *Nocardia asteroides*. *Infect Immun.*, **66(10)**, 4676-4689 (1998).
6. Adams, E., et al., Analysis of amikacin by liquid chromatography with pulsed electrochemical detection. *J. Chromatogr. A*, **819(1-2)**, 93-97 (1998).
7. Oguri, S., and Miki, Y., Determination of amikacin in human plasma by high-performance capillary electrophoresis with fluorescence detection. *J. Chromatogr. B Biomed. Appl.*, **686(2)**, 205-210 (1996).

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