



## Product Information

### Moxalactam sodium salt

Product Number **M 8158**  
Storage Temperature 2-8 °C

#### Product Description

Molecular Formula:  $C_{20}H_{18}N_6O_9SNa_2$   
Molecular Weight: 564.4  
CAS Number: 64953-12-4  
 $\lambda_{max}$ : 270 nm ( $H_2O$ )<sup>1</sup>  
Extinction coefficient:  $E^{mM} = 12 (H_2O)$ <sup>1</sup>  
Synonyms: 7-[[carboxy(4-hydroxyphenyl)acetyl]amino]-7-methoxy-3[[[(1-methyl-1H-tetrazol-5-yl)thio]methyl]-8-oxo-5-oxa-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid disodium salt, lamoxactam disodium, latamoxef disodium<sup>1,2</sup>

Moxalactam is an antibiotic that is closely related to the cephalosporins in terms of structure. One structural difference is that the sulfur atom in the 7-aminocephalosporanic acid portion of the molecule is replaced by oxygen in moxalactam. Moxalactam has an antibacterial activity spectrum comparable to that of cefotaxime, except that moxalactam is generally more active against *Bacteriodes fragilis* and less active against Gram-positive bacteria.<sup>2</sup>

Moxalactam and other antibiotics have been used in an investigation of bacterial determinants that influence  $\beta$ -lactam activity in *Haemophilus influenzae* cells cultured under conditions that mimic *in vivo* growth.<sup>3</sup> In a study of *Escherichia coli* entrapped in agar gel layers vs. free-floating bacteria, moxalactam has a lower antimicrobial efficacy against the immobilized bacteria. However, this activity can be partly recovered in the presence of high phosphate concentrations.<sup>4</sup>

An NMR study of the conformational changes induced in the *Bacillus licheniformis*  $\beta$ -lactamase by moxalactam has been reported.<sup>5</sup> The mechanism of the interaction of moxalactam with the metallo- $\beta$ -lactamase CphA from *Aeromonas*

*hydrophila* has been studied.<sup>6</sup> An investigation of the binding of moxalactam to a mutant of  $\beta$ -lactamase AmpC at Asn<sup>152</sup>, including both thermodynamic and crystallographic studies, has been published.<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), yielding a clear to very slightly hazy, colorless to faint yellow solution.

#### References

1. The Merck Index, 12th ed., Entry# 6369.
2. Martindale The Extra Pharmacopoeia, 31st ed., Reynolds, J. E. F., ed., Royal Pharmaceutical Society (London, UK: 1996), pp. 244-245.
3. Rousseau, N., et al., Effect of beta-lactams on peptidoglycan metabolism of *Haemophilus influenzae* grown in animals. *Antimicrob. Agents Chemother.*, **36(10)**, 2147-2155 (1992).
4. Vilain, S., et al., Phosphate deprivation is associated with high resistance to latamoxef of gel-entrapped, sessile-like *Escherichia coli* cells. *J. Antimicrob. Chemother.*, **49(2)**, 315-320 (2002).
5. Jamin, M., et al., Direct NMR evidence for substrate-induced conformational changes in a  $\beta$ -lactamase. *Biochem. J.*, **301(Pt 1)**, 199-203 (1994).
6. Zervosen, A., et al., Inactivation of *Aeromonas hydrophila* metallo- $\beta$ -lactamase by cephamycins and moxalactam. *Eur. J. Biochem.*, **268(13)**, 3840-3850 (2001).
7. Trehan, I., et al., Inhibition of AmpC  $\beta$ -lactamase through a destabilizing interaction in the active site. *Biochemistry*, **40(27)**, 7992-7999 (2001).

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