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ProductInformation

Carbenicillin disodium salt
Plant Cell Culture Tested

Product Number **C 3416**
Storage Temperature 2-8 °C

Product Description

Molecular Formula: $C_{17}H_{16}N_2Na_2O_6S$
Molecular Weight: 422.4
CAS Number: 4800-94-6
Synonym: carbenicillin sodium, [2S-(2α,5α,6β)]-6-[carboxyphenylacetyl)amino]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid disodium salt, α-carboxybenzylpenicillin disodium[1,2]

This product is plant cell culture tested (0.4 mg/ml) and is appropriate for use in plant cell culture applications.

Carbenicillin disodium is a semi-synthetic β-lactam antibiotic that is related to penicillin. Its bactericidal mode of action is analogous to that of benzylpenicillin, which acts on bacteria by inhibiting bacterial cell wall synthesis. Relative to benzylpenicillin, carbenicillin has a relatively greater spectrum of activity against Gram-negative bacteria such as *Pseudomonas aeruginosa*, but a lower activity against Gram-positive bacteria.[2]

Selective growth of bacteria resistant to carbenicillin has been described in bioreactors.[3] Carbenicillin has been used in a study of cultured *Pseudomonas aeruginosa* PAO1 to probe the mechanism of resistance to tigecycline in particular strains.[4] The kinetics of the stability of antibiotic selection pressure in cultured *Escherichia coli*, using carbenicillin and other antibiotics, have been studied by biosensor methods.[5]

An HPLC method for the analysis of carbenicillin and its degradation products has been described.[6] An LC method to detect carbenicillin in serum has been reported.[7] A technique that uses immobilized β-lactamases to study their kinetic activity on β-lactams, including carbenicillin, has been published.[8]

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, colorless to light yellow solution.

References

1. The Merck Index, 12th ed., Entry# 1838.
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3. Lloyd, J. R., et al., Hollow-fire bioreactors compared to batch and chemostat culture for the production of a recombinant toxoid by a marine Iibrio. Appl. Microbiol. Biotechnol., **48(2)**, 155-161 (1997).
4. Dean, C. R., et al., Efflux-mediated resistance to tigecycline (GAR-936) in *Pseudomonas aeruginosa* PAO1. Antimicrob. Agents Chemother., **47(3)**, 972-978 (2003).
5. Korpimaki, T., et al., Surprisingly fast disappearance of β-lactam selection pressure in cultivation as detected with novel biosensing approaches. J. Microbiol. Methods, **53(1)**, 37-42 (2003).
6. Twomey, P. A., High-performance liquid chromatographic analysis of carbenicillin and its degradation products. J. Pharm. Sci., **70(7)**, 824-826 (1981).
7. Naidong, W., et al., Development and validation of an LC method for the quantitation of carbenicillin in human serum. J. Pharm. Biomed. Anal., **12(6)**, 845-850 (1994).
8. Lawung, R., et al., Calorimetric analysis of cephalosporins using an immobilized TEM-1 β-lactamase on Ni^{2+} chelating Sepharose fast flow. Anal. Biochem., **296(1)**, 57-62 (2001).

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