

Product Data Sheet

Product Name: Nafcillin Sodium

Cat. No.: GC13182

Chemical Properties

Cas. No. 7177-50-6

Chemical Name sodium;(2S,5R,6R)-6-[(2-ethoxynaphthalene-1-carbonyl)amino]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylate;hydrate

SMILES CCOC1=C(C2=CC=CC=C2C=CC1)C(=O)NC3C4N(C3=O)C(C(S4)(C)C)C(=O)[O-].O.[Na+]

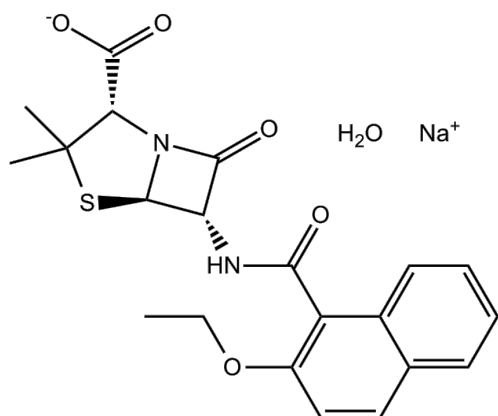
Formula $C_{21}H_{21}N_2O_5S \cdot H_2O \cdot Na$ M.Wt 454.47

Solubility $\geq 15.5\text{mg/mL}$ in DMSO Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Background

Nafcillin sodium monohydrate is a semi-synthetic antibiotic related to penicillin. Target: Antibacterial. Nafcillin sodium is a narrow-spectrum, beta-lactam antibiotic of the penicillin class. As a beta-lactamase-resistant penicillin, it is used to treat infections caused by Gram-positive bacteria, in particular, species of staphylococci that are resistant to other penicillins. Nafcillin is considered therapeutically equivalent to oxacillin, although its safety profile is somewhat different. Nafcillin was

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shown to reversibly inhibit beta-lactamase from *Staphylococcus aureus* PC1 with characteristics indicative of a type A inhibitor [Citri, Samuni & Zyk (1976) Proc. Natl. Acad. Sci. U.S.A. 73, 1048-1052]. At nafcillin concentrations above 80 mM, complete inactivation occurred within 200 s. Upon removal of the excess nafcillin the inhibited enzyme was re-activated completely, with a rate constant of $2.0 \times 10^{-3} \text{ s}^{-1}$ (25 degrees C) [1, 2].

References:

- [1]. Tan, A.K. and A.L. Fink, Identification of the site of covalent attachment of nafcillin, a reversible suicide inhibitor of beta-lactamase. Biochem J, 1992. 281 (Pt 1): p. 191-6.
- [2]. Palmer, D.L., S.B. Pett, and B.F. Akl, Bacterial wound colonization after broad-spectrum versus narrow-spectrum antibiotics. Ann Thorac Surg, 1995. 59(3): p. 626-31.

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