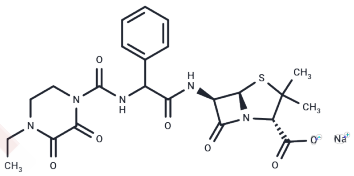
Data Sheet (Cat.No.T1213)

TargetMol

Piperacillin sodium

Chemical Properties



CAS No. : 59703-84-3

Formula: C23H26N5NaO7S

Molecular Weight: 539.54

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	(CL227193))binds to and inactivates penicillin-binding proteins (PBPs), enzymes located on the inner membrane of the bacterial cell wall, resulting in the weakening of the bacterial cell wall and cell lysis. Piperacillin Sodium is the sodium salt of piperacillin, a broad-spectrum semisynthetic, ampicillin-derived ureidopenicillin antibiotic with bactericidal activity. PBPs participate in the terminal stages of assembling the bacterial cell wall, and in reshaping the cell wall during cell division. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity.
Targets(IC50)	Antibacterial,Antibiotic
In vivo	Piperacillin exhibits in vitro antibacterial activity against Gram-positive/Gram-negative and aerobic/anaerobic bacteria. It exerts its action by binding to penicillin-binding proteins, thereby inhibiting bacterial cell wall synthesis. Piperacillin is resistant to hydrolysis by various β-lactamases, including cephalosporinases, penicillinases, and broad-spectrum β-lactamases.
Kinase Assay	Inhibition of Prostaglandin Formation: Recombinant COX-1 and COX-2 from rat (rCOX) and human (hCOX) expressed in a baculovirus system are purified and reconstituted with 2 mM phenol and 1 μM hematin. Then the cyclooxygenase activity is measured using a radiometric assay, and the specific activity of the final enzyme preparations used is between 20,000 and 35,000 units. Ketorolac (2 -15 μL) are diluted in DMSO and preincubated with the appropriate recombinant COX (3 -15 ng) at a final concentration of 0.01 to 1000 μM in a reaction mixture (150 μL) containing 50 mM Tris-HCl buffer (pH 7.9), 2 mM EDTA, 10% glycerol, 2 mM phenol, and 1 μM hematin for 10 minutes. The reaction is initiated by addition of [14C]arachidonic acid (50-60 mCi/mmol in a final concentration of 20 μM) and is terminated 45 seconds later by the addition of 100 μL of 0.2 N HCl and 750 μL of distilled water. The total reaction volume is then applied to a 1 mL C18 Sep-pak column that has previously been washed with 2 mL of methanol followed by 5 mL of deionized water. Oxygenated products are eluted with 3 mL of a mixture of acetonitrile/water/acetic acid (50:50:0.1, v/v/v) and quantified by liquid scintillation spectroscopy.

Solubility Information

Solubility	H2O: 92 mg/mL (170.52 mM),Sonication is recommended. Ethanol: 93 mg/mL (172.37 mM),Sonication is recommended. DMSO: 93 mg/mL (172.37 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.8534 mL	9.2672 mL	18.5343 mL
5 mM	0.3707 mL	1.8534 mL	3.7069 mL
10 mM	0.1853 mL	0.9267 mL	1.8534 mL
50 mM	0.0371 mL	0.1853 mL	0.3707 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

Williamson R, et al. Antimicrob Agents Chemother, 1980, 18(4), 629-637.