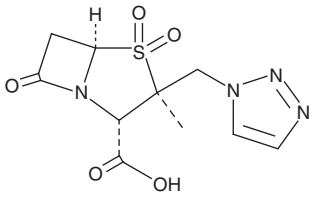
PRODUCT INFORMATION

Tazobactam

Item No. 25679

CAS Registry No.: 89786-04-9
Formal Name: (2S,3S,5R)-3-methyl-7-oxo-3-(1H-1,2,3-triazol-1-ylmethyl)-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid, 4,4-dioxide
Synonyms: CL-298741, YTR 830H
MF: $C_{10}H_{12}N_4O_5S$
FW: 300.3
Purity: ≥98%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Tazobactam is supplied as a crystalline solid. A stock solution may be made by dissolving the tazobactam in the solvent of choice, which should be purged with an inert gas. Tazobactam is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of tazobactam in these solvents is approximately 30 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of tazobactam can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of tazobactam in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Tazobactam is a β-lactamase inhibitor with greater activity against Ambler class A serine penicillinases and class C cephalosporinases, including TEM-1, SHV-1, and P99 (IC_{50}s = 97, 150, and 8.5 nM, respectively) than class B metallo-β-lactamases and the class D oxacillinase OXA-1 (IC_{50}s = 400,000 and 1,400 nM, respectively).[1] However, it also inhibits the class D oxacillinase OXA-2 (IC_{50} = 10 nM). Tazobactam, in combination with piperacillin, is active against Gram-positive (MIC_{90}s = 2-128 µg/ml) and Gram-negative bacteria (MIC_{90}s = 4-128 µg/ml).[2] In a neutropenic mouse model of thigh infection, tazobactam potentiates the activity of ceftolozane against Enterobacteriaceae.[3] Formulations containing tazobactam, alone and in combination with piperacillin, have been used in the treatment of β-lacatamase-producing bacteria.

References

1. Drawz, S.M. and Bonomo, R.A. Three decades of β-lactamase inhibitors. *Clin. Microbiol. Rev.* **23(1)**, 160-201 (2010).
2. Jones, R.N., Pfaller, M.A., Fuchs, P.C., *et al.* Piperacillin/tazobactam (YTR 830) combination. Comparative antimicrobial activity against 5889 recent aerobic clinical isolates and 60 *Bacteroides fragilis* group strains. *Diagn. Microbiol. Infect. Dis.* **12(6)**, 489-494 (1989).
3. Craig, W.A. and Andes, D.R. *In vivo* activities of ceftolozane, a new cephalosporin, with and without tazobactam against *Pseudomonas aeruginosa* and *Enterobacteriaceae*, including strains with extended-spectrum β-lactamases, in the thighs of neutropenic mice. *Antimicrob. Agents Chemother.* **57(4)**, 1577-1582 (2013).

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