

PRODUCT INFORMATION



Piperacillin-d₅ Item No. 25431

Formal Name: (2S,5R,6R)-6-((R)-2-(4-(ethyl-d₅)-2,3-dioxopiperazine-1-carboxamido)-2-phenylacetamido)-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid

MF: C₂₃H₂₂D₅N₅O₇S

FW: 522.6

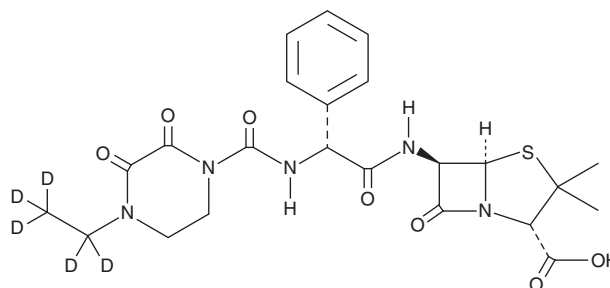
Chemical Purity: ≥90% (Piperacillin)

Deuterium Incorporation: ≥99% deuterated forms (d₁-d₅); ≤1% d₀

Supplied as: A 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

Piperacillin-d₅ is intended for use as an internal standard for the quantification of piperacillin (Item No. 20766) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated versus unlabeled).

Piperacillin-d₅ is supplied as a solid. A stock solution may be made by dissolving the piperacillin-d₅ in the solvent of choice, which should be purged with an inert gas. Piperacillin-d₅ is slightly soluble in ethanol, methanol, and DMSO.

Description

Piperacillin is a broad-spectrum β -lactam antibiotic of the penicillin class.^{1,2} It is active against Gram-negative and Gram-positive bacteria, including *Enterococcus* species, *E. coli*, and *P. mirabilis* (MIC_{50s} = 0.5-2 μ g/ml) as well as gentamicin-susceptible and -resistant strains of *P. aeruginosa* (MIC_{50s} = 8 and 125 μ g/ml, respectively).² In a mouse model of systemic infection, piperacillin is active against *P. aeruginosa* 46220 when used alone or in combination with tazobactam (Item No. 25679; ED_{50s} = 1.58 and 1.34 mg/animal, respectively).³ In the same model, it is less active against *P. aeruginosa* 46220 DR-2, which contains constitutively active β -lactamase, when used alone than when used in combination with tazobactam (ED_{50s} = >20 and 4.39 mg/animal, respectively). Formulations containing piperacillin in combination with tazobactam have been used in the treatment of moderate-to-severe bacterial infections.

References

1. Drawz, S.M. and Bonomo, R.A. Three decades of β -lactamase inhibitors. *Clin. Microbiol. Rev.* **23**(1), 160-201 (2010).
2. White, G.W., Malow, J.B., Zimelis, V.M., et al. Comparative in vitro activity of azlocillin, ampicillin, mezlocillin, piperacillin, and ticarcillin, alone and in combination with an aminoglycoside. *Antimicrob. Agents Chemother.* **15**(4), 540-543 (1979).
3. Nishida, K., Higashitani, F., and Hyodo, A. Superior effect of tazobactam/piperacillin compared to piperacillin on β -lactamase-producing *Pseudomonas aeruginosa*. *Chemotherapy* **43**(3), 171-178 (1997).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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