

Product Data Sheet

Product Name: Cilastatin-15N-d3

Cat. No.: GC47087

Chemical Properties

Cas. No. 2738376-83-3

SMILES OC(C([15NH2])([2H])C([2H])([2H])SCCCC/C=C(C(O)=O)\NC([C@@H]1C(C)(C)C1)=O)=O

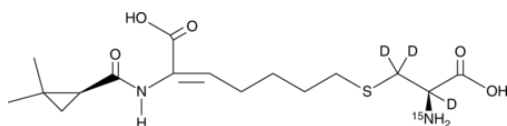
Formula C₁₆H₂₃D₃N[15N]O₅S M.Wt 362.5

Solubility DMSO: Soluble, Methanol: Soluble, Water: Soluble 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

Cilastatin-¹⁵N-d₃ is intended for use as an internal standard for the quantification of cilastatin by GC- or LC-MS. Cilastatin is an inhibitor of dipeptidase (dehydropeptidase I), a renal dipeptidase.¹ It inhibits human renal dipeptidase ($K_i = 0.7 \mu\text{M}$), porcine dipeptidase ($\text{IC}_{50} = 0.11 \mu\text{M}$), and bacterial metallo- β -lactamase CphA from *A. hydrophila* ($\text{IC}_{50} = 178 \mu\text{M}$).^{1,2,3} Cilastatin (200 $\mu\text{g/ml}$) protects primary porcine renal proximal tubular epithelial cells from nephrotoxicity and apoptosis induced by vancomycin.⁴ In a mouse model of systemic infection, cilastatin in combination with imipenem protects mice from *S. aureus*, *E. coli*, and *P. aeruginosa* infection.⁵ Cilastatin was designed to inhibit renal metabolism of imipenem and prolong its half-life.² Formulations containing cilastatin in combination with imipenem have been used to treat susceptible bacterial infections.

1. Campbell, B.J., Forrester, L.J., Zahler, W.L., et al. Beta-lactamase activity of purified and partially

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

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characterized human renal dipeptidase J. Biol. Chem. 259(23)14586-14590(1984) 2. Kahan, F.M., Kropp, H., Sundelof, J.G., et al. Thienamycin: Development of imipenem-cilastatin J. Antimicrob. Chemother. 12(Suppl. D)1-35(1983) 3. Keynan, S., Hooper, N.M., Felici, A., et al. The renal membrane dipeptidase (dehydropeptidase I) inhibitor, cilastatin, inhibits the bacterial metallo- β -lactamase enzyme CphA Antimicrob. Agents Chemother. 39(7)1629-1631(1995) 4. Humanes, B., Jado, J.C., Camañó, S., et al. Protective effects of cilastatin against vancomycin-induced nephrotoxicity Biomed Res. Int. 2015704382(2015) 5. Petersen, P.J., Jacobus, N.V., Weiss, W.J., et al. In vitro and in vivo activities of LJC10,627, a new carbapenem with stability to dehydropeptidase I Antimicrob. Agents Chemother. 35(1)203-207(1991)

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