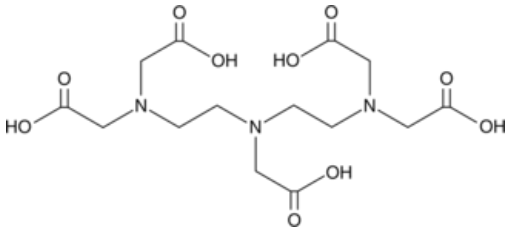
Product Data Sheet

Product Name: Pentetic acid (DTPA)
Cat. No.: GC49058

Chemical Properties

Cas. No.	67-43-6		
SMILES	O=C(CN(CCN(CCN(CC(O)=O)CC(O)=O)CC(O)=O)CC(O)=O)O		
Formula	$C_{14}H_{23}N_3O_{10}$	M.Wt	393.4
Solubility	Ethanol: slightly soluble,Methanol: slightly soluble,PBS (pH 7.2): slightly 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



Protocol

Antibacterial experiment [1]:

Bacterial	PAO1 bacterial
Preparation Method	PAO1 bacterial cultures were grown in Luria-Bertani (LB) broth (10g tryptone, 5g yeast extract, and 10g sodium chloride per liter) at 37°C. The transcript levels of the rpoD gene were similar in cells grown in plain LB medium and in LB medium supplemented with Pentetic acid or EDTA, which was used for normalization.

Caution: Product has not been fully validated for medical applications. For research use only.
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Reaction Conditions	50μM; 16h
Applications	Pentetic acid can significantly inhibit the secretion of elastase.

References:
[1]. Gi M, Jeong J, Lee K, et al. A drug-repositioning screening identifies pentetic acid as a potential therapeutic agent for suppressing the elastase-mediated virulence of Pseudomonas aeruginosa[J]. Antimicrobial agents and chemotherapy, 2014, 58(12): 7205-7214.

Background

Pentetic acid (DTPA) is a powerful aminopolycarboxylic acid chelating agent with a structure similar to EDTA [1]. Pentetic acid binds tightly to metal ions, forming stable complexes that are rapidly excreted through urine, thereby reducing the retention and toxicity of harmful metals in the body [2]. Pentetic acid is primarily used in the treatment of radioactive contamination and as an imaging agent in medical imaging [3-4].

In PAO1 bacterial, Pentetic acid can significantly inhibit the secretion of elastase [5].

References:
[1]. Knepper T P. Synthetic chelating agents and compounds exhibiting complexing properties in the aquatic environment[J]. TrAC Trends in Analytical Chemistry, 2003, 22(10): 708-724.
[2]. Sandal N, Mahar R, Sharma P. Optimizing Ca-DTPA/Zn-DTPA therapy for internal decorporation: transitioning from intravenous to oral route with insights on safety and toxicity[J]. Journal of Radiological Protection, 2025, 45(1): 011002.
[3]. Hussain A, Alajmi M F, Ganguly S. Pentetic acid derived dual purpose fluorescent carbon dots for pH responsive drug delivery and antioxidant proficiency[J]. Diamond and Related Materials, 2024, 145: 111101.
[4]. Capra R, Marcianò N, Vignolo L A, et al. Gadolinium—Pentetic Acid Magnetic Resonance Imaging in Patients With Relapsing Remitting Multiple Sclerosis[J]. Archives of neurology, 1992,

49(7): 687-689.
[5]. Gi M, Jeong J, Lee K, et al. A drug-repositioning screening identifies pentetic acid as a potential therapeutic agent for suppressing the elastase-mediated virulence of Pseudomonas aeruginosa[J]. Antimicrobial agents and chemotherapy, 2014, 58(12): 7205-7214.