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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

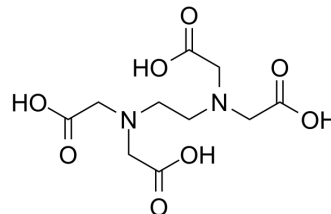
mail@szabo-scandic.com

www.szabo-scandic.com

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Ethylenediaminetetraacetic acid

Cat. No.:	HY-Y0682
CAS No.:	60-00-4
Molecular Formula:	C ₁₀ H ₁₆ N ₂ O ₈
Molecular Weight:	292.24
Target:	Biochemical Assay Reagents; Bacterial; SOD
Pathway:	Others; Anti-infection; Immunology/Inflammation
Storage:	4°C, protect from light, stored under nitrogen * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

1M NaOH : 25 mg/mL (85.55 mM; Need ultrasonic)
0.1 M NaOH : 6.67 mg/mL (22.82 mM; ultrasonic and warming and adjust pH to 7 with NaOH and heat to 60°C)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	3.4218 mL	17.1092 mL	34.2185 mL
	5 mM	0.6844 mL	3.4218 mL	6.8437 mL
	10 mM	0.3422 mL	1.7109 mL	3.4218 mL

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

Ethylenediaminetetraacetic acid (EDTA) is a kind of metal chelating agent (binds to bivalent and trivalent metal cations, including calcium). Ethylenediaminetetraacetic acid has antibacterial, anti-inflammatory, antioxidant, anti-hypercalcemia and anticoagulant activities. Ethylenediaminetetraacetic acid decreases the metal ion-catalyzed oxidative damage to proteins, and allows maintenance of reducing environment during protein purification. Ethylenediaminetetraacetic acid can alleviate the liver fibrosis. Ethylenediaminetetraacetic acid can be used for coronary artery disease and neural system disease research^{[1][2][3][4][5][6][7]}.

In Vitro

Ethylenediaminetetraacetic acid has a strong bactericidal effect on the cell wall of *P. aeruginosa* and *a. faecalis*^[4]. Ethylenediaminetetraacetic acid (0.005-0.01 M) has good heavy metal extraction in contaminated silty-clay-loam soil columns, can extract Pb, Cd and Zn in a concentration-dependent way with an extraction efficiency sequence of Pb > Cd > Zn^[6]. Ethylenediaminetetraacetic acid (1.2 mM) enhances the activity of the CRE driving promoter by activating T-cell death-associated gene 8 (TDAG8) in HEK293T cells, thereby enhancing the production of cAMP in the cells^[7]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Ethylenediaminetetraacetic acid (60 mg/kg; Intraperitoneal injection; Three times per week for three weeks) can reduce liver fibrosis, lipid peroxidation and liver inflammation in CCl₄ induced liver fibrosis rats, and has antioxidant and anti-inflammatory activities^[5].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Wistar rat model of cirrhosis induced by CCl ₄ ^[5]
Dosage:	60 mg/kg, 120 mg/kg, 240 mg/kg
Administration:	Intraperitoneal injection (i.p.); Three times per week for 3 weeks (during this period, CCl ₄ administration continued). After CCl ₄ and mineral oil mixture treatment (200 μL/mouse; i.p.; Three times per week for eight weeks).
Result:	Kept kept all the rats alive at the 60 mg/kg dose, but died at 120 and 240 mg/kg. Reduced fibrosis of the liver in surviving rats (20%).

Animal Model:	Male Wistar rat model of cirrhosis induced by CCl ₄ ^[5]
Dosage:	60 mg/kg
Administration:	Intraperitoneal injection (i.p.); Three times per week for 11 weeks. (Preventive Ethylenediaminetetraacetic acid (EDTA) group: EDTA and CCl ₄ were administered during 11 weeks, three times per week on alternate days). Intraperitoneal injection (i.p.); Three times per week. After CCl ₄ treatment (i.p.; Three times per week for eight weeks) (Therapeutic EDTA group: EDTA and CCl ₄ were administered for 3 weeks, three times per week on alternate days).
Result:	Increased sod activity by 50% in the preventive EDTA group. (Compared with untreated EDTA group) Increased Cp activity in the preventive EDTA (30%) and therapeutic EDTA (20%) groups. (Compared with the fibrotic group) Decreased mRNA expression of the pro-inflammatory molecule (TNF-α and LI-6) and the profibrogenic molecules (TGF-β and αCOLI) in both the prevention and treatment groups.

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2022 Dec 12;e2204998.
- Int J Biol Macromol. 2022.
- Biomed Pharmacother. 2019 Jan;109:2427-2433.
- Colloids Surf B Biointerfaces. 2023 Dec 2, 113680.
- Molecules. 2021 Aug 24;26(17):5115.

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REFERENCES

[1]. Chumanov RS, et al. Artifact-inducing enrichment of ethylenediaminetetraacetic acid and ethyleneglycoltetraacetic acid on anion exchange resins. Anal Biochem. 2011 May 1;412(1):34-9.

[2]. Banfi G, et al. The role of ethylenediamine tetraacetic acid (EDTA) as in vitro anticoagulant for diagnostic purposes. Clin Chem Lab Med. 2007;45(5):565-76.

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- [3]. Ibad A, et al. Chelation therapy in the treatment of cardiovascular diseases. J Clin Lipidol. 2016 Jan-Feb;10(1):58-62.
- [4]. Gray GW, et al. The effect of ethylenediaminetetra-acetic acid on the cell walls of some gram-negative bacteria. J Gen Microbiol. 1965 Jun;39(3):385-99.
- [5]. González-Cuevas J, et al. Ethylenediaminetetraacetic acid induces antioxidant and anti-inflammatory activities in experimental liver fibrosis. Redox Rep. 2011;16(2):62-70.
- [6]. Naghipour D, et al. Remediation of heavy metals contaminated silty clay loam soil by column extraction with ethylenediaminetetraacetic acid and nitrilo triacetic acid[J]. Journal of Environmental Engineering, 2017, 143(8): 04017026.
- [7]. Deai M, et al. Ethylenediaminetetraacetic acid (EDTA) enhances cAMP production in human TDAG8-expressing cells. Biochem Biophys Res Commun. 2022 Oct 20;626:15-20.
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Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA