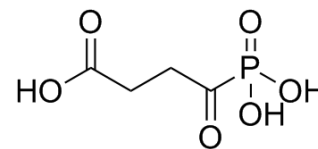


Succinyl phosphonate

Cat. No.:	HY-12688		
CAS No.:	26647-82-5		
Molecular Formula:	C ₄ H ₇ O ₆ P		
Molecular Weight:	182.07		
Target:	Endogenous Metabolite; Reactive Oxygen Species		
Pathway:	Metabolic Enzyme/Protease; Immunology/Inflammation; NF-κB		
Storage:	Pure form	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H₂O : ≥ 50 mg/mL (274.62 mM)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent		1 mg	5 mg	10 mg
	Concentration	Mass			
1 mM			5.4924 mL	27.4620 mL	54.9239 mL
5 mM			1.0985 mL	5.4924 mL	10.9848 mL
10 mM			0.5492 mL	2.7462 mL	5.4924 mL

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

BIOLOGICAL ACTIVITY

Description

Succinyl phosphonate is an α-ketoglutarate dehydrogenase (KGDHC) inhibitor, effectively inhibits (KGDHC) in muscle, bacterial, brain, and cultured human fibroblasts^{[1][4]}. Succinyl phosphonate trisodium salt is an 2-oxoglutarate dehydrogenase (OGDH) inhibitor, impairs viability of cancer cells in a cell-specific metabolism-dependent manner^[2]. Succinyl phosphonate trisodium salt inhibits the glutamate-induced ROS production in glutamate-stimulated hippocampal neurons in situ^[3].

IC₅₀ & Target

α-ketoglutarate dehydrogenase; 2-oxoglutarate dehydrogenase^{[1][4]}; ROS production^[3]

PROTOCOL

Cell Assay^[3]

MTT assay is employed to test cellular viability. Serial dilutions of succinyl phosphonate (0.01-20 mM) are added to cells in fresh culture media. During the medium exchange before the succinyl phosphonate addition, glioblastoma cells are brought

to DMEM with 1 g/L glucose, 1 mM pyruvate and 2 mM glutamax. The influence of succinyl phosphonate in minimal medium is studied in the earlier employed buffered salt solution^[3].

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

CUSTOMER VALIDATION

- Cancer Res. 2019 Jul 1;79(13):3281-3293.
- Free Radic Biol Med. 2016 Apr 9;96:22-33.
- ACS Chem Biol. 2020 Aug 21;15(8):2041-2047.
- Planta. 2018 Oct;248(4):963-979.
- Exp Cell Res. 2019 Sep 15;382(2):111483.

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REFERENCES

[1]. Biryukov AI, et al. Succinyl phosphonate inhibits alpha-ketoglutarate oxidative decarboxylation, catalyzed by alpha-ketoglutarate dehydrogenase complexes from E. coli and pigeon breast muscle. FEBS Lett. 1996 Mar 11;382(1-2):167-70.

[2]. Bunik VI, et al. Phosphonate analogues of alpha-ketoglutarate inhibit the activity of the alpha-ketoglutarate dehydrogenase complex isolated from brain and in cultured cells. Biochemistry. 2005 Aug 9;44(31):10552-61.

[3]. Zündorf G, et al. alpha-Ketoglutarate dehydrogenase contributes to production of reactive oxygen species in glutamate-stimulated hippocampal neurons in situ. Neuroscience. 2009 Jan 23;158(2):610-6.

[4]. Bunik VI, et al. Phosphonate analogues of alpha-ketoglutarate inhibit the activity of the alpha-ketoglutarate dehydrogenase complex isolated from brain and in cultured cells. Biochemistry. 2005 Aug 9;44(31):10552-61.

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

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