Succinyl phosphonate

Cat. No.: HY-12688

CAS No.: 26647-82-5

Molecular Formula: $C_4H_7O_6P$

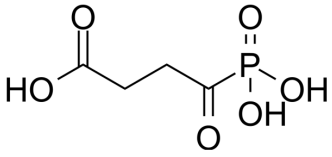
Molecular Weight: 182.07

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



BIOLOGICAL ACTIVITY

Description	Succinyl phosphonate is an α-ketoglutarate dehydrogenase (KGDHC) inhibitor, effective 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].
IC_{50} & 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

- Redox Biol. 2023 Jun.
- Cancer Res. 2019 Jul 1;79(13):3281-3293.
- Cell Death Dis. 2021 Oct 25;12(11):999.
- Free Radic Biol Med. 2016 Apr 9;96:22-33.
- Planta. 2018 Oct;248(4):963-979.

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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-ketoglutaratedehydrogenase 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.

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