

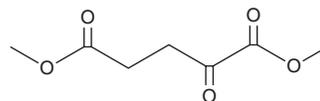
PRODUCT INFORMATION



Dimethyl 2-ketoglutarate

Item No. 28394

CAS Registry No.: 13192-04-6
Formal Name: 2-oxo-pentanedioic acid, 1,5-dimethyl ester
Synonym: 2-KG dimethyl ester, Dimethyl α -ketoglutarate, Dimethyl 2-oxoglutarate
MF: $C_7H_{10}O_5$
FW: 174.2
Purity: $\geq 90\%$
Supplied as: A neat oil
Storage: $-20^\circ C$
Stability: ≥ 4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Dimethyl 2-ketoglutarate is supplied as a neat oil. A stock solution may be made by dissolving the dimethyl 2-ketoglutarate in the solvent of choice, which should be purged with an inert gas. Dimethyl 2-ketoglutarate is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of dimethyl 2-ketoglutarate in these solvents is approximately 30 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of dimethyl 2-ketoglutarate can be prepared by directly dissolving the neat oil in aqueous buffers. The solubility of dimethyl 2-ketoglutarate in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Dimethyl 2-ketoglutarate is an esterified form of the citric acid cycle intermediate α -ketoglutarate.¹ It increases intracellular levels of α -ketoglutarate and decreases intracellular ATP levels in U2OS human osteosarcoma cells cultured in complete- or nutrient-free media when used at a concentration of 5 mM.² Dimethyl 2-ketoglutarate inhibits autophagy and decreases intracellular levels of acetyl-CoA in serum- and nutrient-deprived cells.³ It decreases cardiomyocyte hypertrophy in a mouse model of cardiac pressure overload induced by thoracic aortic constriction when administered at a dose of 300 mg/kg. Dimethyl 2-ketoglutarate reduces serum levels of aspartate aminotransferase (AST) and alanine aminotransferase (ALT) and hepatic fibrosis in a rat model of liver fibrosis induced by carbon tetrachloride (CCl_4).¹

References

1. Zhao, J., Peng, L., Cui, R., *et al.* Dimethyl α -ketoglutarate reduces CCl_4 -induced liver fibrosis through inhibition of autophagy in hepatic stellate cells. *Biochem. Biophys. Res. Commun.* **481(1-2)**, 90-96 (2021).
2. Baracco, E.E., Castoldi, F., Durand, S., *et al.* α -Ketoglutarate inhibits autophagy. *Aging (Albany NY)* **11(11)**, 3418-3431 (2021).
3. Mariño, G., Pietrocola, F., Eisenberg, T., *et al.* Regulation of autophagy by cytosolic acetyl-coenzyme A. *Mol. Cell* **53(5)**, 710-725 (2014).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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