

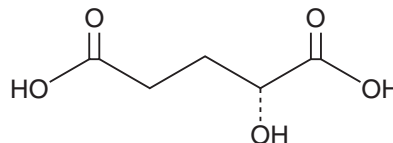
PRODUCT INFORMATION



D- α -Hydroxyglutaric Acid

Item No. 25895

CAS Registry No.:	13095-47-1
Formal Name:	2R-hydroxy-pentanedioic acid
Synonyms:	DGA, D-2-HG, D-2-Hydroxyglutaric Acid
MF:	C ₅ H ₈ O ₅
FW:	148.1
Purity:	≥95%
UV/Vis.:	λ_{max} : 212 nm
Supplied as:	A 10 mg/ml solution in ethanol
Storage:	-20°C
Stability:	≥1 year



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

Laboratory Procedures

D- α -Hydroxyglutaric acid (D-2-HG) is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO and dimethyl formamide purged with an inert gas can be used. The solubility of D-2-HG 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. If an organic solvent-free solution of D-2-HG is needed, it can be prepared by evaporating the ethanol and directly dissolving the neat oil in aqueous buffers. The solubility of D-2-HG in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

D-2-HG is an α -hydroxy acid.¹ It decreases the oxygen consumption rate (OCR) and ratio of ATP to ADP in U87 glioma cells when used at a concentration of 800 μ M. D-2-HG (100 μ M) increases the levels of thiobarbituric acid reactive substances (TBARS) in isolated rat cerebral cortex homogenates.² Urinary levels of D-2-HG are increased in D-2-hydroxyglutaric aciduria, a neurometabolic disease characterized by epilepsy, muscle hypotonia, and delays in psychomotor development.^{3,4} D-2-HG is structurally similar to α -ketoglutarate, the product of wild-type isocitrate dehydrogenases, and competitively inhibits α -ketoglutarate-dependent dioxygenases, including histone lysine demethylases and DNA hydroxylases.⁵⁻⁷

References

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3. Kranendijk, M., Struys, E.A., Van Schaftingen, E., *et al.* IDH2 Mutations in Patients with D-2-Hydroxyglutaric Aciduria. *Science* **330(6002)**, 336 (2014).
4. Struys, E.A., Salomons, G.S., Achouri, Y., *et al.* Mutations in the D-2-hydroxyglutarate dehydrogenase gene cause D-2-hydroxyglutaric aciduria. *Am. J. Hum. Genet.* **76(2)**, 358-360 (2005).
5. Yang, H., Ye, D., Guan, K.L., *et al.* IDH1 and IDH2 mutations in tumorigenesis: Mechanistic insights and clinical perspectives. *Clin. Cancer Res.* **18(20)**, 5562-5571 (2012).
6. Xu, W., Yang, H., Liu, Y., *et al.* Oncometabolite 2-hydroxyglutarate is a competitive inhibitor of α -ketoglutarate-dependent dioxygenases. *Cancer Cell* **19(1)**, 17-30 (2011).
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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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CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897
[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM