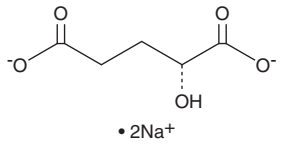
PRODUCT INFORMATION

D-α-Hydroxyglutaric Acid (sodium salt)

Item No. 11605

CAS Registry No.: 103404-90-6
Formal Name: 2R-hydroxy-pentanedioic acid, disodium salt
Synonyms: D-2-HG, D-2-Hydroxyglutaric Acid, DGA, R-2HG
MF: $C_5H_6O_5 \bullet 2Na$
FW: 192.1
Purity: ≥95%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



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) (sodium salt) is supplied as a crystalline solid. Aqueous solutions of D-2-HG (sodium salt) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of D-2-HG (sodium salt) 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 µM. D-2-HG (100 µM) 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

1. Fu, X., Chin, R.M., Vergnes, L., *et al.* 2-Hydroxyglutarate inhibits ATP synthase and mTOR signaling. *Cell Metab.* **22(3)**, 508-515 (2015).
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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).
7. Chowdhury, R., Yeoh, K.K., Tian, Y.M., *et al.* The oncometabolite 2-hydroxyglutarate inhibits histone lysine demethylases. *EMBO Rep.* **12(5)**, 463-469 (2011).

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