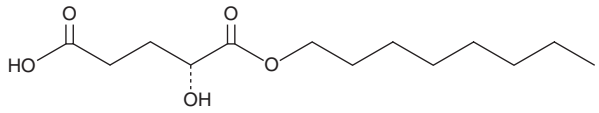
PRODUCT INFORMATION

(2R)-Octyl-α-hydroxyglutarate

Item No. 16366

CAS Registry No.: 1391194-67-4
Formal Name: 2R-hydroxy-pentanedioic acid, 1-octyl ester
Synonym: (2R)-Octyl-2-HG
MF: $C_{13}H_{24}O_5$
FW: 260.3
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

(2R)-Octyl-α-hydroxyglutarate is supplied as a crystalline solid. A stock solution may be made by dissolving the (2R)-octyl-α-hydroxyglutarate in the solvent of choice, which should be purged with an inert gas. (2R)-Octyl-α-hydroxyglutarate is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of (2R)-octyl-α-hydroxyglutarate in ethanol is approximately 20 mg/ml and approximately 10 mg/ml in DMSO and DMF.

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 (2R)-octyl-α-hydroxyglutarate can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of (2R)-octyl-α-hydroxyglutarate in PBS (pH 7.2) is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

α-Hydroxyglutaric acid (2-HG; Item No. 16374) is normally metabolized to 2-oxoglutarate by D- and L-2-hydroxyglutarate dehydrogenases. Mutations in these enzymes cause 2-hydroxyglutaric aciduria, a neurometabolic disorder.[1-3] Recent studies have found that mutations in isocitrate dehydrogenase 1 (IDH1) and IDH2, typically associated with certain cancers, can cause these enzymes to convert isocitrate to 2-HG, rather than α-ketoglutarate.[4,5] 2-HG is structurally similar to α-ketoglutarate and competitively inhibits α-ketoglutarate-dependent dioxygenases, including lysine demethylases and DNA hydroxylases.[5-7] (2R)-Octyl-α-hydroxyglutarate is a cell-permeable derivative of the D-isomer of 2-HG. It has been used to examine the contribution of D-2HG to the oxidative mitochondrial processes of IDH1-mutated cancer cells.[8]

References

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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