

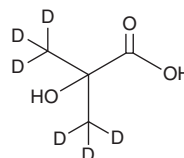
PRODUCT INFORMATION



2-Hydroxyisobutyric acid-d₆

Item No. 43948

CAS Registry No.: 40662-45-1
Formal Name: 2-hydroxy-2-(methyl-d₃)-propanoic-3,3,3-d₃ acid
Synonyms: Acetonic acid-d₆, 2-HIBA-d₆, 2-Methylactic acid-d₆
MF: C₄H₂D₆O₃
FW: 110.1
Chemical Purity: ≥98% (2-Hydroxyisobutyric acid)
Deuterium Incorporation: ≥99% deuterated forms (d₁-d_x); ≤1% d₀
Supplied as: A 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

2-Hydroxyisobutyric acid-d₆ is intended for use as an internal standard for the quantification of 2-hydroxyisobutyric acid by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated versus unlabeled).

2-Hydroxyisobutyric acid-d₆ is supplied as a solid. A stock solution may be made by dissolving the 2-hydroxyisobutyric acid-d₆ in the solvent of choice, which should be purged with an inert gas. 2-Hydroxyisobutyric acid-d₆ is soluble (≥10 mg/ml) in DMSO and sparingly soluble (1-10 mg/ml) in ethanol.

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 2-hydroxyisobutyric acid-d₆ can be prepared by directly dissolving the solid in aqueous buffers. 2-Hydroxyisobutyric acid-d₆ is sparingly soluble (1-10 mg/ml) in PBS (pH 7.2). We do not recommend storing the aqueous solution for more than one day.

Description

2-Hydroxyisobutyric acid is a metabolism modifying agent.^{1,2} It inhibits glutathione-induced decreases in NAD/NADH ratios, ATP levels, and maximal and basal oxygen consumption rates in PC12 adrenal medulla cells.¹ 2-Hydroxyisobutyric acid (10 mM) increases lipid droplet size, decreases reactive oxygen species (ROS), and increases lifespan in *C. elegans*.² It reduces blood glucose levels, decreases the latency to escape in the Barnes maze test, and increases brain Bdnf, nerve growth factor (Ngf), and glutathione (GSH) levels in a *db/db* mouse model of diabetic neuropathy when administered at doses of 15 or 30 mg/kg per day.¹

References

1. Xie, M., Gu, S., Liu, Y., et al. 2-Hydroxyisobutyric acid targeted binding to MT-ND3 boosts mitochondrial respiratory chain homeostasis in hippocampus to rescue diabetic cognitive impairment. *Redox Biol.* **79**, 103446 (2025).
2. Schifano, E., Conta, G., Preziosi, A., et al. 2-hydroxyisobutyric acid (2-HIBA) modulates ageing and fat deposition in *Caenorhabditis elegans*. *Front. Mol. Biosci.* **9**, 986022 (2022).

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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