

PRODUCT INFORMATION



α -Ketoisocaproic Acid- d_3 (sodium salt)

Item No. 43984

CAS Registry No.: 93523-67-2
Formal Name: 4-methyl-2-oxo-pentanoic-5,5,5- d_3 acid, sodium salt
Synonyms: 2-Ketoisocaproate- d_3 , α -Ketoisocaproate- d_3 ,
2-Ketoisocaproic Acid- d_3 , KIC- d_3 , 4-MOP- d_3 ,
2-Oxoisocaproic Acid- d_3 , 4-methyl-2-Oxopentanoate- d_3 ,
4-methyl-2-Oxovaleric Acid- d_3 ,
4-methyl-2-Oxovalerate- d_3

MF: $C_6H_6D_3O_3 \cdot Na$

FW: 155.1

Chemical Purity: $\geq 95\%$ (α -ketoisocaproic acid)

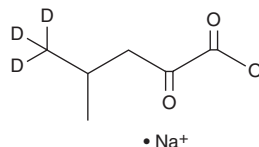
Deuterium

Incorporation: $\geq 99\%$ deuterated forms (d_1 - d_3); $\leq 1\%$ d_0

Supplied as: A solid

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

α -Ketoisocaproic acid- d_3 is intended for use as an internal standard for the quantification of α -ketoisocaproic acid (Item Nos. 34749 | 21052) 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).

α -Ketoisocaproic acid- d_3 is supplied as a solid. Aqueous solutions of α -ketoisocaproic acid- d_3 can be prepared by directly dissolving the solid in aqueous buffers. α -Ketoisocaproic acid- d_3 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

α -Ketoisocaproic acid is a metabolite of L-leucine (Item No. 34342) catabolism.¹ It increases the production of reactive species and decreases the activity of mitochondrial complex I, also known as NADH dehydrogenase, and complex II-III in the rat hippocampus when administered at an intracerebroventricular dose of 4 μ mol.² Urine levels of α -ketoisocaproic acid are reduced in *db/db* diabetic mice compared with heterozygous *db/m* non-diabetic mice.³ α -Ketoisocaproic acid accumulates in the tissues and body fluids of patients with maple syrup urine disease, an inborn error of metabolism characterized by branched-chain α -keto acid dehydrogenase (BCKAD) deficiency and leads to progressive ketoacidosis, failure to thrive, neurological dysfunction, and, potentially, death.²

References

- Schiff, M., Ogier de Baulny, H., and Dionisi-Vici, C. Branched-chain organic acidurias/acidaemias. *Inborn metabolic diseases: Diagnosis and treatment* 277-294 (2016).
- Farias, H.R., Gabriel, J.R., Cecconi, M.L., et al. The metabolic effect of α -ketoisocaproic acid: *In vivo* and *in vitro* studies. *Metab. Brain Dis.* **36**(1), 185-192 (2021).
- Kim, N.H., Hyeon, J.S., Kim, N.H., et al. Metabolic changes in urine and serum during progression of diabetic kidney disease in a mouse model. *Arch. Biochem. Biophys.* **646**, 90-97 (2018).

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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