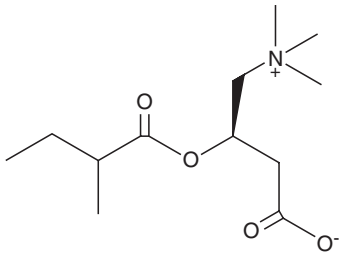
PRODUCT INFORMATION

2-Methylbutyryl-L-carnitine

Item No. 30818

CAS Registry No.: 256928-75-3
Formal Name: (2R)-3-carboxy-N,N,N-trimethyl-2-(2-methyl-1-oxobutoxy)-1-propanaminium, inner salt
Synonyms: C5:0 Carnitine, CAR 5:0, L-Carnitine 2-methylbutyroyl ester, L-Carnitine 2-methylbutyryl ester, 2-Methylbutyroylcarnitine, 2-Methylbutyrylcarnitine
MF: $C_{12}H_{23}NO_4$
FW: 245.3
Purity: ≥98%
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-Methylbutyryl-L-carnitine is supplied as a solid. A stock solution may be made by dissolving the 2-methylbutyryl-L-carnitine in the solvent of choice, which should be purged with an inert gas. 2-Methylbutyryl-L-carnitine is 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-methylbutyryl-L-carnitine can be prepared by directly dissolving the solid in aqueous buffers. 2-Methylbutyryl-L-carnitine 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-Methylbutyryl-L-carnitine is a naturally occurring acylcarnitine that is produced *via* L-isoleucine metabolism.[1] 2-Methylbutyryl-L-carnitine levels decrease in OVCAR-8 and adriamycin-resistant OVCAR-8 ovarian cancer cells undergoing ferroptosis induced by erastin (Item No. 17754).[2] Plasma levels of 2-methylbutyryl-L-carnitine are elevated in patients with non-alcoholic steatohepatitis (NASH).[3] Elevated levels of 2-methylbutyryl-L-carnitine are associated with 2-methylbutyryl-CoA dehydrogenase deficiency (2-MBCDD), also known as short/branched chain acyl-CoA dehydrogenase (SBCAD) deficiency.[4]

References

1. Gibson, K.M., Burlingame, T.G., Hogema, B., *et al.* 2-Methylbutyryl-coenzyme A dehydrogenase deficiency: A new inborn error of L-isoleucine metabolism. *Pediatr. Res.* **47(6)**, 830-833 (2000).
2. Kirkwood-Donelson, K.I., Jarmusch, A.K., Bortner, C.D., *et al.* Metabolic consequences of erastin-induced ferroptosis in human ovarian cancer cells: An untargeted metabolomics study. *Front. Mol. Biosci.* **11**, 1520876 (2025).
3. Kalhan, S.C., Guo, L., Edmison, J., *et al.* Plasma metabolomic profile in nonalcoholic fatty liver disease. *Metabolism* **60(3)**, 404-413 (2011).
4. Van Calcar, S.C., Baker, M.W., Williams, P., *et al.* Prevalence and mutation analysis of short/branched chain acyl-CoA dehydrogenase deficiency (SBCADD) detected on newborn screening in Wisconsin. *Mol. Genet. Metab.* **110(1-2)**, 111-115 (2013).

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