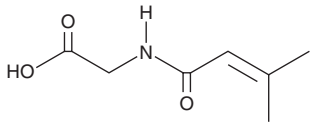
PRODUCT INFORMATION

3-Methylcrotonyl Glycine

Item No. 22888

CAS Registry No.: 33008-07-0
Formal Name: N-(3-methyl-1-oxo-2-buten-1-yl)-glycine
Synonyms: 3-MCG, β-Methylcrotonyl Glycine
MF: $C_7H_{11}NO_3$
FW: 157.2
Purity: ≥98%
UV/Vis.: λ_{max}: 217 nm
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

3-Methylcrotonyl glycine (3-MCG) is supplied as a crystalline solid. A stock solution may be made by dissolving the 3-MCG in the solvent of choice. 3-MCG is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of 3-MCG in ethanol and DMF is approximately 50 mg/ml and approximately 20 mg/ml in DMSO.

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 3-MCG can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 3-MCG in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

3-MCG is a metabolite found in the urine of patients with 3-methylcrotonyl glycinuria, a metabolic disorder characterized by a deficiency in 3-methylcrotonyl-CoA carboxylase, that has diverse biological activities.[1,2] It inhibits CO_2 production and mitochondrial complex II-III and creatine kinase activity in rat cerebral cortex preparations in a concentration-dependent manner.[2] It also inhibits the Na^+/K^+-ATPase in purified synaptic membranes from rat cerebrum, indicating a potential role for this metabolite in the development of CNS damage associated with 3-methycrotonyl glycinuria.

References

1. Bartlett, K., Ng, H., and Leonard, J.V. A combined defect of three mitochondrial carboxylases presenting as biotin-responsive 3-methylcrotonyl glycinuria and 3-hydroxyisovaleric aciduria. *Clin. Chim. Acta.* **100(2)**, 183-186 (1980).
2. Moura, A.P., Ribeiro, C.A., Zanatta, Â., *et al.* 3-Methylcrotonylglycine disrupts mitochondrial energy homeostasis and inhibits synaptic Na^+,K^+-ATPase activity in brain of young rats. *Cell. Mol. Neurobiol.* **32(2)**, 297-307 (2012).

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