

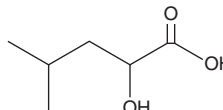
PRODUCT INFORMATION



2-Hydroxyisocaproic Acid

Item No. 36439

CAS Registry No.: 498-36-2
Formal Name: 2-hydroxy-4-methyl-pentanoic acid
Synonyms: α -Hydroxyisocaproic Acid,
2-hydroxy-4-Methylvaleric Acid
MF: C₆H₁₂O₃
FW: 132.2
Purity: \geq 98%
Supplied as: A solid
Storage: -20°C
Stability: \geq 4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

2-Hydroxyisocaproic acid is supplied as a solid. A stock solution may be made by dissolving the 2-hydroxyisocaproic acid in the solvent of choice, which should be purged with an inert gas. 2-Hydroxyisocaproic acid is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of 2-hydroxyisocaproic acid in these solvents is approximately 11 and 12 mg/ml, respectively. 2-Hydroxyisocaproic acid is slightly soluble 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-hydroxyisocaproic acid can be prepared by directly dissolving the solid in aqueous buffers. The solubility of 2-hydroxyisocaproic acid in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

2-Hydroxyisocaproic acid is a metabolite of L-leucine (Item No. 34342) catabolism.¹⁻⁵ It is formed from L-leucine via an α -ketoisocaproic acid (Item Nos. 34749 | 21052) intermediate by hydroxyisocaproic acid dehydrogenase in *L. lactis*.¹ 2-Hydroxyisocaproic acid is active against a variety of Gram-positive and -negative bacteria (IC₅₀s = 0.6-4.5 mg/ml) and several *Candida* species (IC₅₀s = 18-36 mg/ml).^{2,3} Dietary administration of 2-hydroxyisocaproic acid (50.4 g/kg) also prevents reductions in protein synthesis during the immobilization period and increases protein synthesis and muscle mass during the recovery period in caged animals in a rat model of immobilization-induced muscle atrophy.⁴

References

1. Park, B., Hwang, H., Chang, J.Y., et al. Identification of 2-hydroxyisocaproic acid production in lactic acid bacteria and evaluation of microbial dynamics during kimchi ripening. *Sci. Rep.* **7**(1), 10904 (2017).
2. Sakko, M.T., L., Sorsa, T., Hietala, P., et al. 2-Hydroxyisocaproic acid (HICA): A new potential topical antibacterial agent. *Int. J. Antimicrob. Agents* **39**(6), 539-540 (2012).
3. Sakko, M., Moore, C., Novak-Frazer, L., et al. 2-hydroxyisocaproic acid is fungicidal for *Candida* and *Aspergillus* species. *Mycoses* **57**(4), 214-221 (2013).
4. Lang, C.H., Pruznak, A., Navaratnarajah, M., et al. Chronic α -hydroxyisocaproic acid treatment improves muscle recovery after immobilization-induced atrophy. *Am. J. Physiol. Endocrinol. Metab.* **305**(3), E416-E428 (2013).
5. Kuang, B., Dhara, V.G., Hoang, D., et al. Identification of novel inhibitory metabolites and impact verification on growth and protein synthesis in mammalian cells. *Metab. Eng. Commun.* **13**, e00182 (2021).

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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