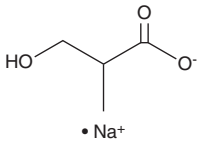
PRODUCT INFORMATION

3-Hydroxyisobutyrate (sodium salt)

Item No. 26105

CAS Registry No.: 1219589-99-7
Formal Name: 3-hydroxy-2-methyl-propanoic acid, monosodium salt
Synonym: 3-HIB
MF: $C_4H_7O_3 \bullet Na$
FW: 126.1
Purity: ≥95%
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-Hydroxyisobutyrate (3-HIB) (sodium salt) is supplied as a crystalline solid. A stock solution may be made by dissolving the 3-HIB (sodium salt) in the solvent of choice, which should be purged with an inert gas. 3-HIB (sodium salt) is soluble in the organic solvent ethanol at a concentration of approximately 5 mg/ml.

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-HIB (sodium salt) can be prepared by directly dissolving the crystalline solid. The solubility of 3-HIB (sodium salt) in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

3-HIB is an intermediate in the metabolism of the branched-chain amino acid valine that is secreted by skeletal muscle.[1,2] It dose-dependently increases fatty acid uptake by human umbilical vein endothelial cells (HUVECs) when used at concentrations ranging from 0.1 to 100 mM.[2] 3-HIB also increases fatty acid uptake and lipid accumulation in mouse skeletal muscle when administered in drinking water. The levels of 3-HIB in muscle are increased in *db/db* diabetic mice and in humans with diabetes. Human plasma levels are increased in obesity and correlate with a future risk of type 2 diabetes.[3] In addition, human serum levels of 3-HIB decrease by 2.5-fold immediately following an exercise regimen of 2.5 hours of running for three days.[1]

References

1. Nieman, D.C., Shanely, R.A., Gillitt, N.D., *et al.* Serum metabolic signatures induced by a three-day intensified exercise period persist after 14 h of recovery in runners. *J. Proteome Res.* **12(10)**, 4577-4584 (2013).
2. Jang, C., Oh, S.F., Wada, S., *et al*. A branched-chain amino acid metabolite drives vascular fatty acid transport and causes insulin resistance. *Nat. Med*. **22(4)**, 421-426 (2016).
3. Mardinoglu, A., Gogg, S., Lotta, L., *et al.* Elevated plasma levels of 3-hydroxyisobutyric acid are associated with incident type 2 diabetes. *EBioMedicine* **27**, 151-155 (2018).

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