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Lieferung & Zahlungsart

siehe unsere Liefer- und Versandbedingungen

Zuschläge

- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

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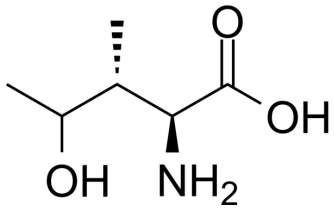
4-Hydroxyisoleucine

Cat. No.:	HY-N6858
CAS No.:	781658-23-9
Molecular Formula:	$C_6H_{13}NO_3$
Molecular Weight:	147
Target:	Others
Pathway:	Others

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (680.27 mM; Need ultrasonic)
DMSO : < 1 mg/mL (ultrasonic;warming;heat to 60°C) (insoluble or slightly soluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	6.8027 mL	34.0136 mL	68.0272 mL
5 mM	1.3605 mL	6.8027 mL	13.6054 mL
10 mM	0.6803 mL	3.4014 mL	6.8027 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (680.27 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

4-Hydroxyisoleucine is an orally active amino acid that can be isolated from fenugreek seeds. 4-Hydroxyisoleucine displays insulinotropic and antidiabetic properties[1].

In Vitro

4-Hydroxyisoleucine (20 μM, 6 h) decreases the level of iRhom2, TACE, TNF-α and MCP-1 in RAW264.7 macrophages and 3 T3-L1 adipocytes with LPS (HY-D1056) induction[2].
4-Hydroxyisoleucine (20 μM, 6 h) increases the product of M1 macrophage IL-6 and decreases the product of M2 macrophage IL-10 in the co-culture system with LPS (HY-D1056) stimulation[2].
4-Hydroxyisoleucine (0-25 μM, 16 h) increases glucose uptake and surface GLUT4myc level in L6-GLUT4myc myotubes in a concentration-dependent manner[3].
4-Hydroxyisoleucine (0-25 μM, 16 h) stimulates GLUT4myc translocation via PI-3-K/AKT-dependent mechanisms in L6-GLUT4myc myotubes[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[2]

Cell Line:	RAW264.7 macrophages and 3 T3-L1 adipocytes
Concentration:	0-20 μM
Incubation Time:	6 h
Result:	Didn’t affect the cell viability.

Cell Migration Assay [2]

Cell Line:	RAW264.7 macrophages and 3 T3-L1 adipocytes
Concentration:	20 μM
Incubation Time:	24 h
Result:	Inhibited the migration of RAW264.7 macrophages in 3 T3-L1 adipocytes.

Western Blot Analysis[3]

Cell Line:	L6-GLUT4myc
Concentration:	25 μM
Incubation Time:	16 h
Result:	Increased the AKT (Ser-473) phosphorylation. Didn’t effect mRNA levels of IRS-1, AKT, GSK3b, or GLUT4 in L6-GLUT4myc myotubes.

In Vivo

4-Hydroxyisoleucine (50 mg/kg, p.o., daily, 8 weeks) inhibits the increase in serum glucose in the fructose-fed rat model of metabolic syndrome[1].

4-Hydroxyisoleucine (200 mg/kg, p.o., 8 weeks) improves dyslipidemia and reduces lipid ectopic accumulation in C57BL/6 mice[4].

4-Hydroxyisoleucine (200 mg/kg, p.o., 8 weeks) decreases the expression of proinflammatory cytokine (IL-6, PAI-1, IL-1β, NF-κB, TNF-α, and MCP-1) and the proportion of proinflammatory M1 macrophages in C57BL/6 mice[4].

4-Hydroxyisoleucine (50 mg/kg, i.g., daily, 14 days) restores high levels of lipids (cholesterol, HDL, LDL and triglycerides) and uric acid in type 1 diabetic rat to that of nondiabetic controls level[5].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Fructose-fed rat[1]
Dosage:	50 mg/kg
Administration:	Oral gavage (p.o.), daily, 8 weeks
Result:	Decreased the levels of glucose and ALT. Reduced 80% of fructosehe-induced AST release to 151 ± 45 U/mL.

Animal Model:	Type 2 diabetic rat[1]
Dosage:	50 mg/kg
Administration:	i.g., daily, 14 days

Result:	Restored the level of HDL-cholesterol to levels comparable to controls.

Animal Model:	Male C57BL/6 mice[4]
Dosage:	50-200 mg/kg
Administration:	Oral gavage (p.o.), 8 weeks
Result:	Decreases the body weights of mice in a dose-dependent manner. Decreased blood glucose levels and fasting plasma insulin content in mice. Decreased the expression of TLR4, inhibited the phosphorylation of JNK, and increased the production of IκB-α.

Animal Model:	Type 1 diabetic rat[5]
Dosage:	50 mg/kg
Administration:	i.g., daily, 14 days
Result:	Improved appearance and heavy ocular vascularization. Reduced the blood glucose from 500 mg/dl to 330 mg/dl. Decreased the levels of lipid markers (TG, LDL and HDL) and uric acid. Didn't increase the level of inculin compared with untreated diabetic controls.

REFERENCES

[1]. Haeri MR, et al. The effect of fenugreek 4-hydroxyisoleucine on liver function biomarkers and glucose in diabetic and fructose-fed rats. Phytother Res. 2009 Jan;23(1):61-4.

[2]. Zhou C, et al. 4-Hydroxyisoleucine relieves inflammation through iRhom2-dependent pathway in co-cultured macrophages and adipocytes with LPS stimulation. BMC Complement Med Ther. 2020 Dec 9;20(1):373.

[3]. Jaiswal N, et al. 4-Hydroxyisoleucine stimulates glucose uptake by increasing surface GLUT4 level in skeletal muscle cells via phosphatidylinositol-3-kinase-dependent pathway. Eur J Nutr. 2012 Oct;51(7):893-8.

[4]. Yang J, et al. 4-Hydroxyisoleucine Alleviates Macrophage-Related Chronic Inflammation and Metabolic Syndrome in Mice Fed a High-Fat Diet. Front Pharmacol. 2021 Jan 21;11:606514.

[5]. Haeri MR, et al. Non-insulin dependent anti-diabetic activity of (2S, 3R, 4S) 4-hydroxyisoleucine of fenugreek (Trigonella foenum graecum) in streptozotocin-induced type I diabetic rats. Phytomedicine. 2012 May 15;19(7):571-4.

Caution: Product has not been fully validated for medical applications. For research use only.

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