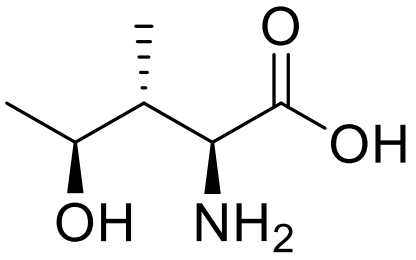
Product data sheet

MedKoo Cat#: 530101 Name: ID-1101 CAS: 55399-93-4 Chemical Formula: $C_6H_{13}NO_3$ Exact Mass: 147.0895 Molecular Weight: 147.174	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

ID-1101, also known as Hydroxyisoleucine, is an insulin sensitizer potentially for the treatment of obesity and type 2 diabetes. It is an amino acid extracted from fenugreek seeds, and exhibits an interesting glucose-dependent insulin-stimulating activity, as shown from studies done on rats in vivo.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
PBS (pH 7.2)	5.0	33.97
Water	125.0	849.33

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	6.79 mL	33.97 mL	67.95 mL
5 mM	1.36 mL	6.79 mL	13.59 mL
10 mM	0.68 mL	3.40 mL	6.79 mL
50 mM	0.14 mL	0.68 mL	1.36 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Zhou C, Chen R, Gao F, Zhang J, Lu F. 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. doi: 10.1186/s12906-020-03166-1. PMID: 33298044; PMCID: PMC7724822.
2. Gao F, Du W, Zafar MI, Shafqat RA, Jian L, Cai Q, Lu F. 4-Hydroxyisoleucine ameliorates an insulin resistant-like state in 3T3-L1 adipocytes by regulating TACE/TIMP3 expression. Drug Des Devel Ther. 2015 Oct 20;9:5727-36. doi: 10.2147/DDDT.S92355. PMID: 26527864; PMCID: PMC4621195.

In vivo study

1. Shandilya A, Mehan S, Kumar S, Sethi P, Narula AS, Alshammari A, Alharbi M, Alasmari AF. Activation of IGF-1/GLP-1 Signalling via 4-Hydroxyisoleucine Prevents Motor Neuron Impairments in Experimental ALS-Rats Exposed to Methylmercury-Induced Neurotoxicity. Molecules. 2022 Jun 16;27(12):3878. doi: 10.3390/molecules27123878. PMID: 35745001; PMCID: PMC9228431.
2. Mehmood Siddiqui E, Mehan S, Upadhayay S, Khan A, Halawi M, Ahmed Halawi A, Alsaffar RM. Neuroprotective efficacy of 4-Hydroxyisoleucine in experimentally induced intracerebral hemorrhage. Saudi J Biol Sci. 2021 Nov;28(11):6417-6431. doi: 10.1016/j.sjbs.2021.07.010. Epub 2021 Jul 10. PMID: 34764759; PMCID: PMC8568986.

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7. Bioactivity

Biological target:

(2S,3R,4S)-4-Hydroxyisoleucine is an orally active compound isolated from Trigonella foenum-graecum, with anti-diabetes and anti-diabetic nephropathy activity.

In vitro activity

In this study, ELISA was used to determine the effects of 4-HIL (ID-1101) on the levels of TNF-α and MCP-1 (Fig. 4). After 6 h of LPS stimulation, the levels of TNF-α and MCP-1 were reduced by 4-HIL in a dose-dependent (Fig. 4a and d) and time-dependent manner (Fig. 4b and e).

Reference: BMC Complement Med Ther. 2020 Dec 9;20(1):373. https://pubmed.ncbi.nlm.nih.gov/33298044/

In vivo activity

Chronic oral administration of 4-HI (ID-1101) at the doses of 50 mg/kg and 100 mg/kg remarkably increased the IGF-1 level in brain homogenate (one-way ANOVA: $F(5, 25) = 5.595$, $p < 0.001$) and CSF samples (one-way ANOVA: $F(5,25) = 0.971$, $p < 0.001$). Moreover, 4-HI100 mg/kg was more efficient than 4-HI50 mg/kg in restoring the IGF-1 protein level in rat brain homogenate and CSF samples (Figure 10A,B).

Reference: Molecules. 2022 Jun 16;27(12):3878. https://pubmed.ncbi.nlm.nih.gov/35745001/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.