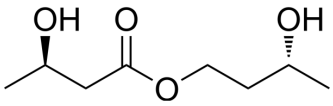
Ketone monoester

Cat. No.:	HY-15344
CAS No.:	1208313-97-6
Molecular Formula:	$C_8H_{16}O_4$
Molecular Weight:	176.21
Target:	Others
Pathway:	Others

Storage:

Pure form	-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 (567.50 mM; Need ultrasonic)
DMSO : 100 mg/mL (567.50 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.6750 mL	28.3752 mL	56.7505 mL
5 mM	1.1350 mL	5.6750 mL	11.3501 mL
10 mM	0.5675 mL	2.8375 mL	5.6750 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 (567.50 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 5.5 mg/mL (31.21 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 5.5 mg/mL (31.21 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 5.5 mg/mL (31.21 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Ketone monoester is an orally available ketone monoester that serves as a source of nutritional ketones. Ketone monoester increases plasma beta-hydroxybutyrate, acetoacetate, blood glucose, blood sodium, and blood creatinine levels in mouse models. Ketone monoester has the potential to improve athletic performance and endurance in animals. Ketone monoester partially prevents myasthenia in septic mice. Ketone monoester may also be used to study Parkinson's disease or diabetes[1]

[2][3].

In Vivo

Ketone monoester increases specific muscle force, moderately raises blood glucose concentrations, lowers Aldh3b2 gene expression, increases blood Na^+ levels and blood creatinine levels, and reduces plasma free fatty acid concentrations[1].

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

Animal Model:	Septic mice[1]
Dosage:	10, 20, 40 and 80 mmol/kg/day
Administration:	PO
Result:	Increased specific muscle force as compared with placebo to 93% of healthy control levels at 40 mmol/kg/day. Resulted in moderately higher blood glucose concentrations as compared with placebo at 40 mmol/kg/day. Lowered Aldh3b2 gene expression than with placebo at 40 mmol/kg/day. Evoked a moderate further increase in blood Na^+ levels and increased blood creatinine levels at 20 mmol/kg/day. Reduced plasma free fatty acid concentrations by 10 or 20 mmol/kg/day. Hepatic gene expression levels of Aldh1a7 was also reduced by sepsis but increased by D-3HHB.

CUSTOMER VALIDATION

- Pharmaceuticals. 2023 Jui 3, 16(7), 953.
- Toxicol Appl Pharmacol. 2024 Apr 26:486:116943.

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REFERENCES

[1]. Weckx R, et al. Efficacy and safety of ketone ester infusion to prevent muscle weakness in a mouse model of sepsis-induced critical illness. Sci Rep. 2022 Jun 22;12(1):10591.

[2]. Williams MS, et al. The Chemistry of the Ketogenic Diet: Updates and Opportunities in Organic Synthesis. Int J Mol Sci. 2021 May 15;22(10):5230.

[3]. Clarke K, et al. Oral 28-day and developmental toxicity studies of (R)-3-hydroxybutyl (R)-3-hydroxybutyrate. Regul Toxicol Pharmacol. 2012 Jul;63(2):196-208.

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