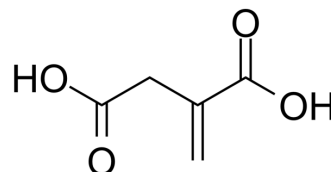


Itaconic acid

Cat. No.:	HY-Y0520
CAS No.:	97-65-4
Molecular Formula:	C ₅ H ₆ O ₄
Molecular Weight:	130.1
Target:	Endogenous Metabolite; Ferroptosis
Pathway:	Metabolic Enzyme/Protease; Apoptosis
Storage:	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro	H ₂ O : 27.78 mg/mL (213.53 mM; Need ultrasonic)				
		Solvent Concentration	Mass 1 mg	5 mg	10 mg
	Preparing Stock Solutions	1 mM	7.6864 mL	38.4320 mL	76.8639 mL
		5 mM	1.5373 mL	7.6864 mL	15.3728 mL
		10 mM	0.7686 mL	3.8432 mL	7.6864 mL
Please refer to the solubility information to select the appropriate solvent.					
In Vivo	1. Add each solvent one by one: PBS Solubility: 25 mg/mL (192.16 mM); Clear solution; Need ultrasonic				

BIOLOGICAL ACTIVITY

Description	Itaconic acid, a precursor of polymers, chemicals, and fuels, can be synthesized by many fungi. Itaconic acid also is a macrophage-specific metabolite. Itaconic acid mediates crosstalk between macrophage metabolism and peritoneal tumors. Itaconic acid has anti-inflammatory, anti-microbial and immunomodulatory effect ^{[1][2][4][5]} .
IC₅₀ & Target	Human Endogenous Metabolite
In Vitro	Itaconic acid (2–8 mM, 24 h) induces ferroptosis by activating ferritinophagy in PANC1 cells ^[3] . Itaconic acid (10 mM, 24 h) inhibits LPS-induced inflammatory cytokines in RAW264.7 cells ^[4] . Itaconic acid (10 mM, 24 h) promotes the pentose phosphate pathway (PPP) and NADPH oxidase activity in RAW264.7 cells ^[4] . Itaconic acid (10 mM, 24-72 h) inhibits cell viability of cerebellar granule cells (CGC) and inhibits ADP-stimulated respiration in permeabilized CGC cells ^[5] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

- [1]. Weiss JM, et. al. Itaconic acid mediates crosstalk between macrophage metabolism and peritoneal tumors. *J Clin Invest*. 2018 Aug 31;128(9):3794-3805.
 - [2]. Zhao M, et. al. Itaconic acid production in microorganisms. *Biotechnol Lett*. 2018 Mar;40(3):455-464.
 - [3]. Qu C, et al. Itaconic acid induces ferroptosis by activating ferritinophagy. *Biochem Biophys Res Commun*. 2021 Oct 25;583:56-62.
 - [4]. Zhu X, et al. Itaconic acid exerts anti-inflammatory and antibacterial effects via promoting pentose phosphate pathway to produce ROS. *Sci Rep*. 2021 Sep 13;11(1):18173.
 - [5]. Umbrasas D, et al. Effects of itaconic acid on neuronal viability and brain mitochondrial functions. *J Bioenerg Biomembr*. 2021 Oct;53(5):499-511.
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Caution: Product has not been fully validated for medical applications. For research use only.

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