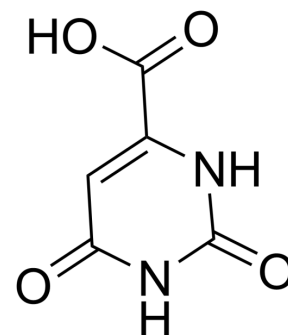


## Orotic acid

<b>Cat. No.:</b>	HY-N0157		
<b>CAS No.:</b>	65-86-1		
<b>Molecular Formula:</b>	C <sub>5</sub> H <sub>4</sub> N <sub>2</sub> O <sub>4</sub>		
<b>Molecular Weight:</b>	156.1		
<b>Target:</b>	Nucleoside Antimetabolite/Analog; Endogenous Metabolite		
<b>Pathway:</b>	Cell Cycle/DNA Damage; Metabolic Enzyme/Protease		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 55 mg/mL (352.34 mM; Need ultrasonic)  
 H<sub>2</sub>O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	6.4061 mL	32.0308 mL	64.0615 mL
	5 mM	1.2812 mL	6.4061 mL	12.8123 mL
	10 mM	0.6406 mL	3.2031 mL	6.4061 mL

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

#### In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.75 mg/mL (17.62 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Orotic acid (6-Carboxyuracil), a precursor in biosynthesis of pyrimidine nucleotides and RNA, is released from the mitochondrial dihydroorotate dehydrogenase (DHODH) for conversion to UMP by the cytoplasmic UMP synthase enzyme. Orotic acid is a marker for measurement in routine newborn screening for urea cycle disorders. Orotic acid can induce hepatic steatosis and hepatomegaly in rats<sup>[1][2][3]</sup>.

#### IC<sub>50</sub> & Target

Human Endogenous Metabolite

#### In Vitro

Orotic acid is found in milk and dairy products, and it is converted to uridine for use in the pyrimidine salvage pathway predominantly in liver, kidney and erythrocytes<sup>[2]</sup>.

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

## In Vivo

Orotic acid is a marker for measurement of urea cycle disorders (UCDs), including ornithine transcarbamylase deficiency (OTCD)<sup>[2]</sup>.

Orotic acid (1.0% addition to the diet; p.o. for 3-10 d) induces a development of fatty liver by day 7, and decreases purine/pyrimidine ratio of hepatic acid-soluble nucleotides by day 3<sup>[3]</sup>.

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

## CUSTOMER VALIDATION

- J Mol Med (Berl). 2019 Aug;97(8):1183-1193.

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## REFERENCES

- [1]. Löffler M, et, al. Orotate (orotic acid): An essential and versatile molecule. Nucleosides Nucleotides Nucleic Acids.
- [2]. Staretz-Chacham O, et, al. The role of orotic acid measurement in routine newborn screening for urea cycle disorders. J Inherit Metab Dis. 2020 Nov 15.
- [3]. Durschlag RP, et, al. Orotic acid-induced metabolic changes in the rat. J Nutr. 1980 Apr;110(4):816-21.

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

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