D-(+)-Glucono-1,5-lactone

Cat. No.: HY-I0301

CAS No.: 90-80-2

Molecular Formula: $C_6H_{10}O_6$

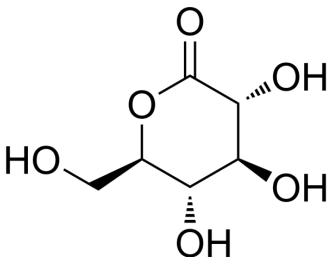
Molecular Weight: 178.14

Target: Endogenous Metabolite; Reactive Oxygen Species

Pathway: Metabolic Enzyme/Protease; Immunology/Inflammation; NF-κB

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (561.36 mM; Need ultrasonic)

H_2O : ≥ 100 mg/mL (561.36 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.6136 mL	28.0678 mL	56.1356 mL
5 mM	1.1227 mL	5.6136 mL	11.2271 mL
10 mM	0.5614 mL	2.8068 mL	5.6136 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 150 mg/mL (842.03 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (14.03 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (14.03 mM); Clear solution

BIOLOGICAL ACTIVITY

Description D-(+)-Glucono-1,5-lactone is a polyhydroxy (PHA) that is capable of metal chelating, moisturizing and antioxidant activity.

IC_{50} & Target Human Endogenous Metabolite

In Vitro D-(+)-Glucono-1,5-lactone is a lactone (cyclic ester) of D-gluconic acid. D-(+)-Glucono-1,5-lactone is commonly found in

honey, fruit juices, personal lubricants, and wine. D-(+)-Glucono-1,5-lactone is neutral, but hydrolyses in water to gluconic acid which is acidic, adding a tangy taste to foods, though it has roughly a third of the sourness of citric acid. It is metabolized to glucose; one gram of D-(+)-Glucono-1,5-lactone yields roughly the same amount of metabolicenergy as one gram of sugar. Upon addition to water, GDL is partially hydrolysed to gluconic acid, with the balance between the lactone form and the acid form established as a chemical equilibrium. The rate of hydrolysis of D-(+)-Glucono-1,5-lactone is increased by heat and high pH[1].

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

REFERENCES

[1]. Xu Y, et al. Aggregation and structural changes of silver carp actomyosin as affected by mild acidification with D-gluconic acid δ-lactone. Food Chem. 2012 Sep 15;134(2):1005-10.

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