



# SZABO SCANDIC

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## Produktinformation



Forschungsprodukte & Biochemikalien



Zellkultur & Verbrauchsmaterial



Diagnostik & molekulare Diagnostik



Laborgeräte & Service

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### Lieferung & Zahlungsart

siehe unsere [Liefer- und Versandbedingungen](#)

### Zuschläge

- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

### SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

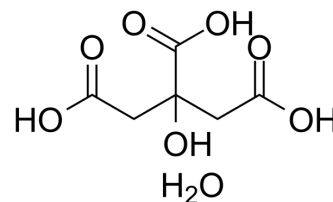
[mail@szabo-scandic.com](mailto:mail@szabo-scandic.com)

[www.szabo-scandic.com](http://www.szabo-scandic.com)

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## Citric acid monohydrate

<b>Cat. No.:</b>	HY-N1428A
<b>CAS No.:</b>	5949-29-1
<b>Molecular Formula:</b>	C <sub>6</sub> H <sub>10</sub> O <sub>8</sub>
<b>Molecular Weight:</b>	210.14
<b>Target:</b>	Endogenous Metabolite; Apoptosis; Antibiotic
<b>Pathway:</b>	Metabolic Enzyme/Protease; Apoptosis; Anti-infection
<b>Storage:</b>	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

DMSO : 100 mg/mL (475.87 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	4.7587 mL	23.7937 mL	47.5873 mL
	5 mM	0.9517 mL	4.7587 mL	9.5175 mL
	10 mM	0.4759 mL	2.3794 mL	4.7587 mL

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

### BIOLOGICAL ACTIVITY

#### Description

Citric acid monohydrate is a natural preservative and food tartness enhancer. Citric acid monohydrate induces apoptosis and cell cycle arrest at G2/M phase and S phase. Citric acid monohydrate cause oxidative damage of the liver by means of the decrease of antioxidative enzyme activities. Citric acid monohydrate causes renal toxicity in mice<sup>[1][2][3]</sup>.

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

Human Endogenous Metabolite

#### In Vitro

Citric acid monohydrate (0-12.5 mM; 24 h) shows antiproliferative activity in a dose dependent manner<sup>[3]</sup>.  
 Citric acid monohydrate (12.5 mM; 72 h) induces apoptosis and cell cycle arrest at G2/M phase and S phase in a dosedependent manner<sup>[3]</sup>.  
 Citric acid monohydrate (12.5 mM; 48 h) increases the expression of FAS, BAX, BID, AIF, EndoG, cytochrome c, PARP, GADD153, GRP78 and caspase-3, -8, -9, and decreases of BCL-2 and BCL-X<sup>[3]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay<sup>[3]</sup>

Cell Line:	HaCaT cells
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Concentration:	0, 2.5, 5, 7.5, 10, 12.5 mM
Incubation Time:	24 h
Result:	Inhibited the cell viability in a dose dependent manner.
Cell Cycle Analysis <sup>[3]</sup>	
Cell Line:	HaCaT cells
Concentration:	12.5 mM
Incubation Time:	0, 12, 24, 48, 72 h
Result:	Induced apoptosis and cell cycle arrest at G2/M phase and S phase in a dosedependent manner.
Western Blot Analysis <sup>[3]</sup>	
Cell Line:	HaCaT cells
Concentration:	12.5 mM
Incubation Time:	12, 24, 48 h
Result:	Increased the expression of FAS, BAX, BID, AIF, EndoG, cytochrome c, PARP, GADD153, GRP78 and caspase-3, -8, -9, and decreased of BCL-2 and BCL-XL.

#### In Vivo

Citric acid monohydrate (120, 240, and 480 mg/kg; i.p.) significantly decreases GSH-Px activity and induces an increase in the MDA (malonyldialdehyde) levels in mouse liver<sup>[1]</sup>.

Citric acid monohydrate (120, 240, and 480 mg/kg; i.p.) induces apoptosis by increases caspase-3 activity in a dose-dependent manner in mouse hepatocytes<sup>[1]</sup>.

Citric acid monohydrate (120, 240, and 480 mg/kg; i.p.; weekly for 3 weeks) causes renal toxicity in mice<sup>[2]</sup>.

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

Animal Model:	20 g male Kunming mice <sup>[2]</sup>
Dosage:	120, 240, 480 mg/kg
Administration:	i.p.; weekly for 3 weeks
Result:	T-SOD and GSH-Px activities in the treated groups decreased with increasing doses of citric acid, NOS activity tended to increase, and H2O2 and MDA contents gradually decreased.

#### CUSTOMER VALIDATION

- Food Chem. 2022: 134807.
- New J Chem. 03 Aug 2022.

See more customer validations on [www.MedChemExpress.com](http://www.MedChemExpress.com)

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## REFERENCES

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- [1]. Chen X, et al. Study on injury effect of food additive citric acid on liver tissue in mice. *Cytotechnology*. 2014 Mar;66(2):275-82.
- [2]. Chen X, Lv Q, Liu Y, Deng W. Effects of the food additive, citric acid, on kidney cells of mice. *Biotech Histochem*. 2015 Jan;90(1):38-44.
- [3]. Ying TH, et al. Citric acid induces cell-cycle arrest and apoptosis of human immortalized keratinocyte cell line (HaCaT) via caspase- and mitochondrial-dependent signaling pathways. *Anticancer Res*. 2013 Oct;33(10):4411-20.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA