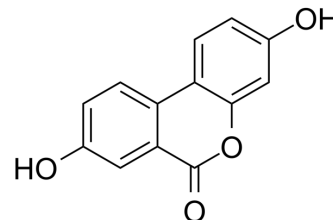


## Urolithin A

<b>Cat. No.:</b>	HY-100599
<b>CAS No.:</b>	1143-70-0
<b>Molecular Formula:</b>	C <sub>13</sub> H <sub>8</sub> O <sub>4</sub>
<b>Molecular Weight:</b>	228.2
<b>Target:</b>	Drug Metabolite; Reactive Oxygen Species; DNA/RNA Synthesis; Autophagy; Apoptosis; Endogenous Metabolite
<b>Pathway:</b>	Metabolic Enzyme/Protease; Immunology/Inflammation; NF-κB; Cell Cycle/DNA Damage; Autophagy; Apoptosis
<b>Storage:</b>	Powder    -20°C    3 years 4°C        2 years In solvent   -80°C    1 year -20°C    6 months



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 30 mg/mL (131.46 mM; Need ultrasonic)				
		Solvent Concentration	Mass 1 mg	5 mg	10 mg
	<b>Preparing Stock Solutions</b>	1 mM	4.3821 mL	21.9106 mL	43.8212 mL
		5 mM	0.8764 mL	4.3821 mL	8.7642 mL
		10 mM	0.4382 mL	2.1911 mL	4.3821 mL
Please refer to the solubility information to select the appropriate solvent.					
<b>In Vivo</b>	1. Add each solvent one by one: 0.5% CMC/saline water Solubility: 5 mg/mL (21.91 mM); Suspended solution; Need ultrasonic				
	2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.5 mg/mL (10.96 mM); Clear solution				
	3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 2.5 mg/mL (10.96 mM); Suspended solution; Need ultrasonic				
	4. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.5 mg/mL (10.96 mM); Clear solution				

### BIOLOGICAL ACTIVITY

<b>Description</b>	Urolithin A, a gut-microbial metabolite of ellagic acid, exerts anti-inflammatory, antiproliferative, and antioxidant properties. Urolithin A induces autophagy and apoptosis, suppresses cell cycle progression, and inhibits DNA synthesis <sup>[1][2]</sup> .
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<b>IC<sub>50</sub> &amp; Target</b>	Microbial Metabolite
<b>In Vitro</b>	<p>Micromolar urolithin A concentrations induces both autophagy and apoptosis. Urolithin A suppresses cell cycle progression and inhibited DNA synthesis in human sw620 colorectal cancer cells<sup>[2]</sup>.</p> <p>Urolithin A shows antiproliferative effects and inhibits T24 and Caco-2 cell growth with IC<sub>50</sub>s of 43.9 and 49 μM, respectively<sup>[3]</sup>.</p> <p>Urolithin A exerts a dose- and time-dependent significant arrest at G2/M and S phases after treatments with 50 and 100 μM at 24 and 48 h compared to control cells. It induces cell apoptosis with 50 and 100 μM<sup>[4]</sup>.</p> <p>Urolithin A shows potent antiproliferative activity on HepG2 cells. When cell death is induced by Urolithin A, the expression of β-catenin, c-Myc and Cyclin D1 are decreased and TCF/LEF transcriptional activation is notably down-regulated. Urolithin A also increases protein expression of p53, p38-MAPK and caspase-3, but suppresses expression of NF-κB p65 and other inflammatory mediators<sup>[5]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>In Vivo</b>	<p>The volume of paw edema is reduced at 1 h after oral administration of urolithin A. In addition, plasma in treated mice exhibited significant oxygen radical antioxidant capacity (ORAC) scores with high plasma levels of the unconjugated form at 1 h after oral administration of urolithin A<sup>[6]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## PROTOCOL

<b>Cell Assay</b> <sup>[2]</sup>	<p>Human colon cancer cells HT-29 are treated for 24 and 48 h at 100 and 50 μM of Urolithin A and Iso Urolithin A aglycones and their glucuronide conjugates. Cell viability and proliferation are measured using a TC10 automated cell counter with the addition of Trypan blue for viability determination. IC<sub>50</sub> values are determined by MTT assay<sup>[2]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>Animal Administration</b> <sup>[4]</sup>	<p>Mice: Paw edema is induced in the right hind paw of ICR mice by the subcutaneous injection of 1% λ-carrageenan in physiological saline (50 μL). The inflammation level is quantified by the volume of paw edema. Urolithin A dissolved in 0.5% carboxymethylcellulose suspension is orally administered to the mice at 1 or 6 h before carrageenan injection. The anti-inflammatory effects of urolithin A on carrageenan-induced edema in mice are analyzed<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## CUSTOMER VALIDATION

- J Nanobiotechnology. 2022 Mar 19;20(1):149.
- Cell Death Dis. 2023 May 24;14(5):339.
- J Headache Pain. 2023 Sep 5;24(1):122.
- Commun Biol. 2022 Jun 22;5(1):616.
- Radiother Oncol. 2023 Nov 23;110028.

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## REFERENCES

- [1]. Gong Z, et al. Urolithin A attenuates memory impairment and neuroinflammation in APP/PS1 mice.
- [2]. Zhao W, et al. Metabolite of ellagitannins, urolithin A induces autophagy and inhibits metastasis in human sw620colorectal cancer cells. Mol Carcinog. 2018 Feb;57(2):193-200.

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- [3]. Qiu Z, et al. In vitro antioxidant and antiproliferative effects of ellagic acid and its colonic metabolite, urolithins, on human bladder cancer T24 cells. *Food Chem Toxicol.* 2013 Sep;59:428-37.
- [4]. González-Sarrías A, et al. Antiproliferative activity of the ellagic acid-derived gut microbiota isourolithin A and comparison with its urolithin A isomer: the role of cell metabolism. *Eur J Nutr.* 2017 Mar;56(2):831-841.
- [5]. Wang Y, et al. In vitro antiproliferative and antioxidant effects of urolithin A, the colonic metabolite of ellagic acid, on hepatocellular carcinomas HepG2 cells. *Toxicol In Vitro.* 2015 Aug;29(5):1107-15.
- [6]. Ishimoto H, et al. In vivo anti-inflammatory and antioxidant properties of ellagitannin metabolite urolithin A. *Bioorg Med Chem Lett.* 2011 Oct 1;21(19):5901-4.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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