Resveratrol

Cat. No.: HY-16561

CAS No.: 501-36-0

Molecular Formula: $C_{14}H_{12}O_3$

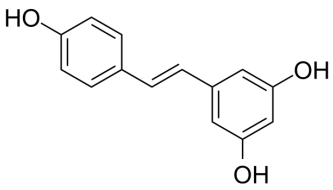
Molecular Weight: 228.24

Target: IKK; Autophagy; Mitophagy; Sirtuin; Apoptosis; Bacterial; Fungal; Antibiotic; Keap1-Nrf2

Pathway: NF-κB; Autophagy; Cell Cycle/DNA Damage; Epigenetics; Apoptosis; Anti-infection

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 (438.14 mM; Need ultrasonic)
Ethanol : 50 mg/mL (219.07 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	4.3814 mL	21.9068 mL	43.8135 mL
	5 mM	0.8763 mL	4.3814 mL	8.7627 mL
	10 mM	0.4381 mL	2.1907 mL	4.3814 mL

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

In Vivo

1. Add each solvent one by one: 0.5% CMC-Na/saline water
   Solubility: 16.67 mg/mL (73.04 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 12.5 mg/mL (54.77 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 5 mg/mL (21.91 mM); Clear solution; Need ultrasonic
4. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: 5 mg/mL (21.91 mM); Clear solution; Need ultrasonic
5. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: ≥ 5 mg/mL (21.91 mM); Clear solution
6. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution
7. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution
8. Add each solvent one by one: 10% DMSO >> 90% corn oil

	Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution 9. Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution 10. Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline) Solubility: ≥ 2.5 mg/mL (10.95 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Resveratrol (trans-Resveratrol; SRT501), a natural polyphenolic phytoalexin that possesses anti-oxidant, anti-inflammatory, cardioprotective, and anti-cancer properties. Resveratrol (SRT 501) has a wide spectrum of targets including mTOR, JAK, β-amyloid, Adenylyl cyclase, IKKβ, DNA polymerase. Resveratrol also is a specific SIRT1 activator[1][2][3][4]. Resveratrol is a potent pregnane X receptor (PXR) inhibitor[5]. Resveratrol is an Nrf2 activator, ameliorates aging-related progressive renal injury in mice model[6]. Resveratrol increases production of NO in endothelial cells[7].			
IC_{50} & Target	Adenylyl cyclase 0.8 nM (IC_{50})	IKKβ 1 μM (IC_{50})	DNA polymerase α 3.3 μM (IC_{50})	DNA polymerase δ 5 μM (IC_{50})
	Autophagy	Mitophagy	Sirtuin	
In Vitro	Resveratrol (trans-Resveratrol; SRT501) is one of the numerous polyphenolic compounds found in several vegetal sources In the vast majority of cases, Resveratrol displays inhibitory/activatory effects in the micromolar range, which is potentially attainable pharmacologically, although targets with affinities in the nanomolar range have also been reported[1]. MCF-7 cells are plated in DME-F12 medium supplemented with 5% FBS in the presence of increasing concentrations of Resveratrol. Control cells are treated with the same volume of vehicle only (0.1% ethanol). Resveratrol inhibits the growth of MCF-7 cells in a dose-dependent fashion. Addition of 10 μM Resveratrol results in an 82% inhibition of MCF-7 cell growth after 6 days while at 1 μM, only a 10% inhibition is observed. The cells treated with 10 μM Resveratrol have a doubling time of 60 hr whereas control cells doubled every 30 hr. Trypan blue exclusion assay shows that at concentrations of 10 μM or lower, Resveratrol does not affect cell viability (90% viable cells) whereas at 100 μM, only 50% of the cells are viable after 6 days of Resveratrol treatment. Moreover, MCF-7 cells do not undergo apoptosis after incubation with Resveratrol at concentration of 10 μM as determined by ApoAlert Annexin V Apoptosis kit[2]. Resveratrol increases the production of nitric oxide (NO) in endothelial cells by upregulating the expression of endothelial NO synthase (eNOS), stimulating eNOS enzymatic activity, and preventing eNOS uncoupling[7]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.			
In Vivo	The average tumor volume is reduced by treatment with Resveratrol (trans-Resveratrol; SRT501) at a dose of 50 mg/kg body weight (195.5±124.8 mm^3; P<0.05) or 100 mg/kg body weight (81.7±70.5 mm^3; P<0.001) compare with the vehicle-treated animals (315±94 mm^3). There is a good correlation between the tumor volume and the tumor mass[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.			

PROTOCOL

Cell Assay [2]	To determine the effect of Resveratrol on cell growth, MCF-7 cells are plated in 6-well plates at 10^5 cells per well in 2 mL of DME-F12 medium supplemented with 5% FBS in the presence or absence of increasing concentrations of Resveratrol. The cell number is measured every 2 days till day 6 with a hemocytometer after detaching the cells with trypsin-EDTA[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	Mice[3] Female BALB/c (nu/nu) mice, 6 weeks old, are used. PA-1 cells ($1×10^7$ in 200 μL PBS) are injected s.c. on the right hind flank. Tumor volume (length×width×depth×0.52) is measured three times a week. After 10 days of implantation, two groups (n=10)

	are given Resveratrol (dissolved in 5% ethanol and 25% polyethyleneglycol 400 in distilled water) i.p. at a daily dose of 50 or 100 mg/kg body weight for consecutive 4 weeks, whereas the other group receive the vehicle only. Body weights are recorded everyday. Animals are given bromodeoxyuridine (BrdUrd; 10 mg/kg body weight, i.p.) 2 h before sacrifice. Xenograft tumors are weighed and frozen in liquid nitrogen or fixed in 10% formalin and embedded in paraffin. The BrdUrd-labeled cells in paraffin-embedded tissues are detected employing a monoclonal anti-BrdUrd antibody. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- ACS Nano. 2023 Oct 2.
- Environ Int. 2023 Nov 25, 108354.
- Redox Biol. 2022 Jun;52:102310.
- Sci Total Environ. 2023 Sep 16;166954.
- PLoS Biol. 2022 Jun 30;20(6):e3001682.

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REFERENCES

[1]. Pirola L, et al. Resveratrol: one molecule, many targets. IUBMB Life. 2008 May;60(5):323-32.

[2]. Lu R, et al. Resveratrol, a natural product derived from grape, exhibits antiestrogenic activity and inhibits the growth of human breast cancer cells. J Cell Physiol. 1999 Jun;179(3):297-304.

[3]. Lee MH, et al. Resveratrol suppresses growth of human ovarian cancer cells in culture and in a murine xenograft model: eukaryotic elongation factor 1A2 as a potential target. Cancer Res. 2009 Sep 15;69(18):7449-58.

[4]. Du LL, et al. Activation of sirtuin 1 attenuates cerebral ventricular streptozotocin-induced tau hyperphosphorylation and cognitive injuries in rat hippocampi. Age (Dordr). 2014 Apr;36(2):613-23.

[5]. Smutny T, et al. Resveratrol as an inhibitor of pregnane X receptor (PXR): another lesson in PXR antagonism. J Pharmacol Sci. 2014;126(2):177-8.

[6]. Eun Nim Kim,et al. Resveratrol, an Nrf2 activator, ameliorates aging-related progressive renal injury. Aging (Albany NY). 2018 Jan; 10(1): 83–99.

[7]. Huige Li, et al. Resveratrol and Vascular Function. Int J Mol Sci. 2019 Apr 30;20(9):2155.

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