

Sulforaphane

Chemical Properties

CAS No. : 4478-93-7

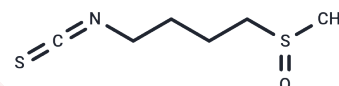
Formula: C₆H₁₁NOS₂

Molecular Weight: 177.29

Storage: Keep away from direct sunlight, Keep away from moisture, Store at low temperature

Powder: -20°C for 3 years

Actual storage temperature shall be subject to the COA.



Biological Description

Description	Sulforaphane is a natural isothiocyanate that activates Nrf2 and inhibits AMPK-dependent signaling. Sulforaphane has antitumor and anti-inflammatory activities by increasing the transcription of tumor suppressor proteins and inhibiting histone deacetylase activity.
Targets(IC50)	Apoptosis, Bcl-2 Family, Reactive Oxygen Species, Caspase, Nrf2, HDAC, ROS
In vitro	<p>METHODS: Human colorectal cancer cells HT29 were treated with Sulforaphane (15 μM) for 24-96 h. Cell viability was measured by MTT assay.</p> <p>RESULTS: Sulforaphane at 15 μM was able to inhibit cell growth and induce cell death. 75% of the cells were already dead at 24 h, and almost all of them were dead at 96 h. [1]</p> <p>METHODS: Gastric cancer cells BGC-823 and MGC-803 were treated with Sulforaphane (5-10 μM) for 48 h. The expression levels of target proteins were measured by Western Blot.</p> <p>RESULTS: When gastric cancer cells were treated with Sulforaphane, the expression levels of cell cycle regulatory proteins such as p53 and p21 were increased in a dose-dependent manner, whereas the expression level of S-phase related protein CDK2 was significantly decreased. [2]</p>
In vivo	<p>METHODS: To test the anti-inflammatory activity, a single dose of Sulforaphane (50 mg/kg) was administered intraperitoneally to BALB/c mice. Three days later, LPS was injected to induce acute lung injury (ALI).</p> <p>RESULTS: Sulforaphane significantly reduced LDH activity, lung wet-to-dry ratio, serum IL-6 and TNF-α levels, and NF-κB protein expression in mice with LPS-induced acute lung injury. Sulforaphane exerted its protective effect on LPS-induced ALI through the Nrf2/ARE pathway. [3]</p>
Cell Research	HT29 cells are seeded at low density (5×10 ⁴ cells/mL) in 35- or 120-mm diameter Primaria dishes in standard medium containing 5% FCS. One day after seeding, the medium is changed, and HT29 cells are treated with sulforaphane (0-30 μM). An equivalent amount of the solvent (ethanol) is added to control cells (0.2% final concentration). The drug effect on cellular viability is evaluated using the MTT assay [1].
Animal Research	At age 47, 48, 49, 50, and 51 days, each animal receives by gavage either 0.5 mL of Emulphor EL-620 alone or the specified doses (75, 100, or 150 μM daily) of sulforaphane or compound 2, 3, or 4 in 0.5 mL of Emulphor EL-620. On day 50, 3 hr after

Animal Research	administration of the vehicle or protector, all rats also receive an intragastric instillation of 8.0 mg of DMBA dissolved in 1.0 mL of sesame oil. This dose of DMBA is selected to produce a substantial tumor incidence, but not one so high as to overwhelm a potential chemoprotective effect. The animals are examined once weekly for the appearance and location of palpable tumors. At age 202 days, i.e., 152 days after carcinogen administration, all animals are euthanized with ether and weighed. The tumors are separated from the fat and connective tissue by dissection weighed and fixed in buffered 10% formalin. All tumors are identified microscopically by examination of stained sections [3].
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Solubility Information

Solubility	DMSO: 252.5 mg/mL (1424.22 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Saline: 5.5 mg/mL (31.02 mM),Solution. 5% DMSO+95% Saline: 2.89 mg/mL (16.3 mM),Solution. <i>Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.6405 mL	28.2024 mL	56.4048 mL
5 mM	1.1281 mL	5.6405 mL	11.281 mL
10 mM	0.564 mL	2.8202 mL	5.6405 mL
50 mM	0.1128 mL	0.564 mL	1.1281 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

- Gamet-Payraastre L, et al. Sulforaphane, a naturally occurring isothiocyanate, induces cell cycle arrest and apoptosis in HT29 human colon cancer cells. *Cancer Res.* 2000 Mar 1;60(5):1426-33.
- Wang Y, et al. Sulforaphane induces S-phase arrest and apoptosis via p53-dependent manner in gastric cancer cells. *Sci Rep.* 2021 Jan 28;11(1):2504.
- Qi T, et al. Sulforaphane exerts anti-inflammatory effects against lipopolysaccharide-induced acute lung injury in mice through the Nrf2/ARE pathway. *Int J Mol Med.* 2016 Jan;37(1):182-8.

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