# Teprenone

**Cat. No.:** HY-B0779

**CAS No.:** 6809-52-5

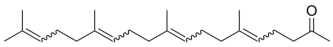
**Molecular Formula:** $C_{23}H_{38}O$

**Molecular Weight:** 330.55

**Target:** HSP

**Pathway:** Cell Cycle/DNA Damage; Metabolic Enzyme/Protease

**Storage:** 4°C, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 100 mg/mL (302.53 mM; Need ultrasonic)
Ethanol : 50 mg/mL (151.26 mM; Need ultrasonic)

| Preparing Stock Solutions | Mass / Solvent / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 3.0253 mL | 15.1263 mL | 30.2526 mL |
| | 5 mM | 0.6051 mL | 3.0253 mL | 6.0505 mL |
| | 10 mM | 0.3025 mL | 1.5126 mL | 3.0253 mL |

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

**In Vivo**

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2.5 mg/mL (7.56 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (7.56 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.56 mM); Clear solution
4. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (7.56 mM); Clear solution
5. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (7.56 mM); Suspended solution; Need ultrasonic
6. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.56 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description** Teprenone is an anti-ulcer agent, and works as an inducer of heat shock proteins (HSPs).

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| **$IC_{50}$ & Target** | HSP |
| **In Vitro** | Teprenone is an inducer of HSPs. Teprenone (Geranylgeranylacetone, 1 μM) significantly prevents ethanol-induced exfoliation, and reduces lactate dehydrogenase (LDH) release in gastric mucosal cells. Teprenone (1 μM) gradually increases HSC70 level, and rapidly accumulates the stress-inducible HSP90, HSP70, and HSP60 concentrations within 30-60 min. Teprenone also activates the heat shock factor 1[1].<br>Teprenone (0-20 μM) slightly increases human umbilical vein endothelial cell (HUVEC) viability following irradiation (IR). Teprenone (10 μM) exhibits no effects on HUVEC migration and invasion, but enhances HUVEC tube formation and wound healing both with and without IR. Teprenone (10 μM) also promotes angiogenesis by inducing VEGF and eNOS expression in HUVECs[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | Teprenone (200 mg/kg, p.o.) results in the accumulation of HSP70 mRNA in rats, and the accumulation is enhanced by stress addition in the mucosa of Teprenone-pretreated rats compared with that of vehicle-pretreated rats. Teprenone (200 mg/kg, p.o.) markedly suppresses the ulcer formation after 2- and 4-hour stress loading in rats[1].<br>Teprenone (200 mg/kg daily) induces HSP72 in retinal ganglion cells (RGCs) from rat retinas. Teprenone significantly reduces the loss of RGCs (evaluated after intraocular pressure (IOP) elevation), lessens optic nerve damage, decreases the number of TUNEL-positive cells in the RGC layer, and increases HSP72 in a rat model of glaucoma[2].<br>Teprenone (200 mg/kg, p.o.) shows protective effect on radiation-induced intestinal injury in mice[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## PROTOCOL

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| **Cell Assay** [3] | Human umbilical vein endothelial cells (HUVECs) are seeded onto 48-well plates at a density of $1 \times 10^2$ cells/well before Teprenone and/or radiation treatment. Cell viability is determined at 48 h after treatment using 0.5 mg/mL MTT solution in serum-free media. This solution is incubated with the cells for 2 h in the 37°C humidified atmosphere containing 5% $CO_2$. Then, the MTT solution is removed, and the cells are dissolved in 100 μL of DMSO. Optical densities of the supernatants are measured at 540 nm with an ELISA spectrophotometer[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **Animal Administration** [1] | Male Wister strain rats weighing approximately 250 g are individually housed in wire-mesh cages in a room maintained at 23°C on a 12-hour light-dark cycle. Rats are allowed free access to a standard laboratory chow. Teprenone (200 mg/kg; as emulsion with 5% gum arabic and 0.008% α-tocopherol) or vehicle (5% gum arabic emulsion containing 0.008% α-tocopherol) is given orally in a volume of 5 mL/kg through a metal tubing attached to a 6-mL syringe. Two hours later, rats are placed in restraint cages and then vertically immersed in water at 23°C to the level of the xyphoid process. The rats are killed by decapitation at the indicated times[1].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- Phytother Res. 2018 Jul;32(7):1320-1331.
- Chem Biol Interact. 2023 Jun 10;110603.
- Cell Stress Chaperones. 2021 Feb 17.

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## REFERENCES

[1]. Hirakawa T, et al. Geranylgeranylacetone induces heat shock proteins in cultured guinea pig gastric mucosal cells and rat gastric mucosa. Gastroenterology. 1996 Aug;111(2):345-57.

[2]. Caprioli J, et al. Retinal ganglion cell protection with geranylgeranylacetone, a heat shock protein inducer, in a rat glaucoma model. Trans Am Ophthalmol Soc. 2003;101:39-50; discussion 50-1.

[3]. Han NK, et al. Geranylgeranylacetone Ameliorates Intestinal Radiation Toxicity by Preventing Endothelial Cell Dysfunction. Int J Mol Sci. 2017 Oct 7;18(10).



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