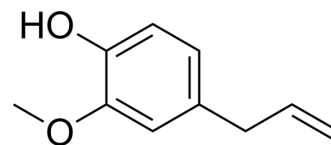


## Eugenol

<b>Cat. No.:</b>	HY-N0337												
<b>CAS No.:</b>	97-53-0												
<b>Molecular Formula:</b>	C <sub>10</sub> H <sub>12</sub> O <sub>2</sub>												
<b>Molecular Weight:</b>	164.2												
<b>Target:</b>	Bacterial; Parasite; Reactive Oxygen Species; Apoptosis; Ferroptosis												
<b>Pathway:</b>	Anti-infection; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Apoptosis												
<b>Storage:</b>	<table border="0"> <tr> <td>Pure form</td> <td>-20°C</td> <td>3 years</td> </tr> <tr> <td></td> <td>4°C</td> <td>2 years</td> </tr> <tr> <td>In solvent</td> <td>-80°C</td> <td>6 months</td> </tr> <tr> <td></td> <td>-20°C</td> <td>1 month</td> </tr> </table>	Pure form	-20°C	3 years		4°C	2 years	In solvent	-80°C	6 months		-20°C	1 month
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	4°C	2 years											
In solvent	-80°C	6 months											
	-20°C	1 month											



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 100 mg/mL (609.01 mM)  
 \* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	6.0901 mL	30.4507 mL	60.9013 mL
	5 mM	1.2180 mL	6.0901 mL	12.1803 mL
	10 mM	0.6090 mL	3.0451 mL	6.0901 mL

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

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
 Solubility: ≥ 3.25 mg/mL (19.79 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: ≥ 3.25 mg/mL (19.79 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 3.25 mg/mL (19.79 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Eugenol is an essential oil found in cloves with antibacterial, anthelmintic and antioxidant activity. Eugenol is shown to inhibit lipid peroxidation.

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

Bacterial, Parasite<sup>[1]</sup>

<b>In Vitro</b>	<p>The essential oil of <i>O. gratissimum</i>, as well as eugenol, are efficient in inhibiting eclodibility of <i>H. contortus</i> eggs, showing possible utilizations in the treatment of gastrointestinal helminthiasis of small ruminants. At 0.50% concentration, the essential oil and eugenol show a maximum eclodibility inhibition<sup>[1]</sup>. Eugenol inhibits superoxide anion generation in xanthine-xanthine oxidase system to an extent of 50% at concentrations of 250 <math>\mu</math>M. Eugenol also inhibits the generation of hydroxyl radicals to an extent of 70%. The OH-radical formation measured by the hydroxylation of salicylate to 2, 3-dihydroxy benzoate is inhibited to an extent of 46% by eugenol at 250 <math>\mu</math>M<sup>[2]</sup>. Eugenol protects against RS-induced development of IBS-like gastrointestinal dysfunction through modulation of HPA-axis and brain monoaminergic pathways apart from its antioxidant effect. Eugenol (50 mg/kg) reduces 80% of RS-induced increase in fecal pellets similar to that of ondansetron. Eugenol attenuates 80% of stress-induced increase in plasma corticosterone and modulates the serotonergic system in the PFC and amygdala. Eugenol attenuates stress-induced changes in norepinephrine and potentiates the antioxidant defense system in all brain regions<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>In Vivo</b>	<p>Eugenol (33 mg/kg) administered orally for 2 days causes significant suppression of knee joint edema, which continues to be significantly reduced at the end of the treatment. After 2 days, eugenol-treated mycobacterial arthritic rats show a marked reduction in paw swelling<sup>[4]</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>[1]</sup>	<p>The essential oil and eugenol are diluted in aqueous solution of Tween 20 (0.5%) in the following concentrations: 0.0625, 0.12, 0.25, 0.5 and 1.0% to be used in the egg hatch test<sup>[1]</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>Rats: The treatment groups of arthritic rats are given either ingwerol (0.33 mL/kg or 33 mg/kg) or eugenol (0.33 mL/kg or 33 mg/kg) orally 1 day prior to the induction of arthritis. This treatment is continued for 26 days on a daily basis. Mycobacterium treated rats receive physiological saline orally<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## CUSTOMER VALIDATION

- Autophagy. 2022 Oct 27.
- Int J Mol Sci. 2024 Feb 8;25(4):2098.
- Eur J Pharmacol. 2022 Jun 5;924:174955.
- Microbiol Spectr. 2023 Sep 14;e0366622.

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## REFERENCES

- [1]. Pessoa LM, et al. Anthelmintic activity of essential oil of *Ocimum gratissimum* Linn. and eugenol against *Haemonchus contortus*. *Vet Parasitol.* 2002 Oct 16;109(1-2):59-63.
- [2]. Reddy AC, et al. Studies on the inhibitory effects of curcumin and eugenol on the formation of reactive oxygenspecies and the oxidation of ferrous iron. *Mol Cell Biochem.* 1994 Aug 17;137(1):1-8.
- [3]. Garabadu D, et al. Protective effect of eugenol against restraint stress-induced gastrointestinal dysfunction: Potential use in irritable bowel syndrome. *Pharm Biol.* 2015 Jul;53(7):968-74.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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