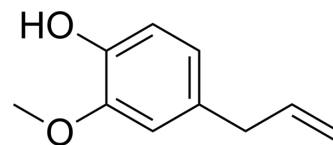


## Eugenol

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



### SOLVENT & SOLUBILITY

In Vitro

DMSO :  $\geq 100$  mg/mL (609.01 mM)

\* " $\geq$ " means soluble, but saturation unknown.

Preparing Stock Solutions	<div>Solvent</div> <div>Concentration</div>	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

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility:  $\geq 3.25$  mg/mL (19.79 mM); Clear solution

2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE- $\beta$ -CD in saline)  
Solubility:  $\geq 3.25$  mg/mL (19.79 mM); Clear solution

3. Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility:  $\geq 3.25$  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 helminthosis 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 trated 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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