Pyocyanin

Cat. No.: HY-111278

CAS No.: 85-66-5

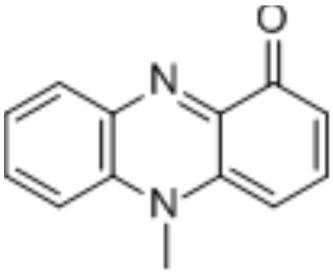
Molecular Formula: $C_{13}H_{10}N_2O$

Molecular Weight: 210.23

Target: Reactive Oxygen Species; Bacterial; Drug Metabolite

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Anti-infection

Storage: 4°C, sealed storage, away from moisture and light
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 9.09 mg/mL (43.24 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	4.7567 mL	23.7835 mL	47.5670 mL
	5 mM	0.9513 mL	4.7567 mL	9.5134 mL
	10 mM	0.4757 mL	2.3783 mL	4.7567 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: ≥ 0.91 mg/mL (4.33 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.91 mg/mL (4.33 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Pyocyanin (Pyocyanine) is a toxic, quorum sensing (QS) controlled metabolite produced by Pseudomonas aeruginosa. Pyocyanin is a REDOX active compound that promotes the production of reactive oxygen species (ROS). Pyocyanin has antibacterial and anti-inflammatory activity[1][2][3][4].

In Vitro

Pyocyanin (5, 10 μM, 24 h) has an anti-inflammatory effect on mouse peritoneal macrophages, down-regulating levels of nitric oxide, TNF-α and IL-1β[2].

Pyocyanin (10, 20, 40 μg/mL, 48 h) shows dose-dependent inhibitory activity against MRSA with a MIC value of 8 μg/mL[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[2]

Cell Line:	murine peritoneal macrophage
Concentration:	1, 5, 10, 50 100 μM
Incubation Time:	24 h
Result:	Decreased macrophage viability at 50 and 100 μM.

In Vivo

Pyocyanin (intranasal, 50 μg/50 μL in 0.9% saline) induces systemic oxidative stress, inflammation and behavioral changes in C57BL/6 J mice[4].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57BL/6 J mice[4]
Dosage:	50 μg/50 μL in 0.9% saline
Administration:	intranasal
Result:	Reduced the spontaneous locomotor activity. Increased in lipid peroxidation, and systemic inflammation.

CUSTOMER VALIDATION

- Int Immunopharmacol. 2024 Feb 15:129:111636.

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REFERENCES

[1]. Marreiro de Sales-Neto J, et al. Anti-inflammatory potential of pyocyanin in LPS-stimulated murine macrophages. Immunopharmacol Immunotoxicol. 2019 Feb;41(1):102-108.

[2]. Kamer AMA, et al. Antibacterial, antibiofilm, and anti-quorum sensing activities of pyocyanin against methicillin-resistant Staphylococcus aureus: in vitro and in vivo study. BMC Microbiol. 2023 Apr 24;23(1):116.

[3]. Arora D, et al. Pyocyanin induces systemic oxidative stress, inflammation and behavioral changes in vivo. Toxicol Mech Methods. 2018 Jul;28(6):410-414.

[4]. Paulina Castañeda-Tamez, et al. Pyocyanin Restricts Social Cheating in Pseudomonas aeruginosa. Front Microbiol. 2018 Jun 27;9:1348.

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