

Product Data Sheet

Product Name: Propiconazole

Cat. No.: GC47977

Chemical Properties

Cas. No. 60207-90-1

SMILES C1C(C=C1)=CC(Cl)=C1C2(CN3C=NC=N3)OCC(CCC)O2

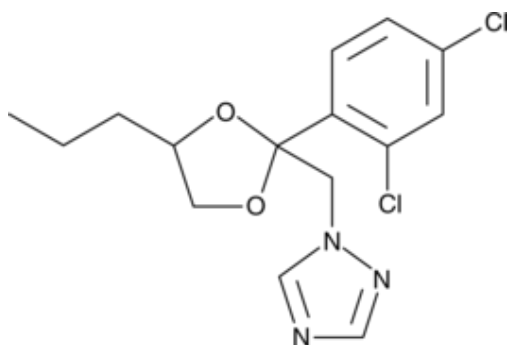
Formula C₁₅H₁₇Cl₂N₃O₂ M.Wt 342.2

Solubility DMF: 33 mg/ml, DMF:PBS (pH 7.2) (1:3): 0.16 mg/ml, DMSO: 20 mg/ml, Ethanol: 10 mg/ml
Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines AML12 cells

Preparation Method AML12 cells were treated with 0,25 and 100µM Propiconazole for 48h.

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

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Reaction
Conditions 0.25–100µM; 48h

Applications Propiconazole induced glutathione-S-transferase (GSTα) protein levels and increased the levels of thiobarbituric acid reactive substances (TBARS) in AML12 cells.

Animal experiment [2]:

Animal models Propiconazole-induced model

Preparation Method Male CD-1 mice were administered Propiconazole by gavage daily for 14 days at doses of 10, 75, and 150mg/kg body weight/day.

Dosage form 10, 75, and 150mg/kg; po; 14d

Applications Propiconazole induces increased cytochrome P450 gene expression and related enzyme activities in mouse liver.

References:

- [1]. Nesnow S, Grindstaff R D, Lambert G, et al. Propiconazole increases reactive oxygen species levels in mouse hepatic cells in culture and in mouse liver by a cytochrome P450 enzyme mediated process[J]. Chemico-biological interactions, 2011, 194(1): 79-89.
- [2]. Sun G, Thai S F, Tully D B, et al. Propiconazole-induced cytochrome P450 gene expression and enzymatic activities in rat and mouse liver[J]. Toxicology letters, 2005, 155(2): 277-287.

Background

Propiconazole is an orally active N-substituted triazole Propiconazole with antifungal activity. Propiconazole is a hepatocarcinogen and has certain reproductive and developmental toxicity in experimental animals^{[1][2]}.

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Propiconazole (0.25-100μM; 48h) induced glutathione-S-transferase (GSTα) protein levels and increased the levels of thiobarbituric acid reactive substances (TBARS) in AML12 cells^[1]. After Propiconazole (0-160μM; 3-72h) treatment of HepG2 cells, the cells induced morphological changes through oxidative stress and TGF-β/Smad pathways, with a decrease in E-cadherin and an increase in vimentin and Snail^[2]. Propiconazole (1-20μM; 24h) treatment of AML12 hepatocytes mediated alterations in the mevalonate/cholesterol pathway and caused increased cell proliferation through dysregulation of the cholesterol pathway. Propiconazole increased Ras farnesylation, altered Ras membrane localization, and activated downstream signaling effects, increasing Erk1/2 phosphorylation^[3].

Propiconazole (10, 75, and 150mg/kg; po; 14 days) fed to healthy mice induced an increase in cytochrome P450 gene expression and related enzyme activities in the liver of mice^[4]. In a diet-induced obese mouse model, Propiconazole (0.04-100mg/kg; 10 weeks) dose-dependently increased liver weight and triglyceride levels in mice, and high doses induced signs of liver inflammation^[5]. Propiconazole (5.0mg/kg; 96h) induced oxidative damage in zebrafish embryos, manifested by increased ROS and MDA levels and altered antioxidant enzyme activities^[6].

References:

- [1]. Nesnow S, Grindstaff R D, Lambert G, et al. Propiconazole increases reactive oxygen species levels in mouse hepatic cells in culture and in mouse liver by a cytochrome P450 enzyme mediated process[J]. Chemico-biological interactions, 2011, 194(1): 79-89.
- [2]. Kwon H C, Sohn H, Kim D H, et al. In vitro and in vivo study on the toxic effects of Propiconazole fungicide in the pathogenesis of liver fibrosis[J]. Journal of Agricultural and Food Chemistry, 2021, 69(26): 7399-7408.
- [3]. Murphy L A, Moore T, Nesnow S. Propiconazole-enhanced hepatic cell proliferation is associated with dysregulation of the cholesterol biosynthesis pathway leading to activation of Erk1/2 through Ras farnesylation[J]. Toxicology and applied pharmacology, 2012, 260(2): 146-154.
- [4]. Sun G, Thai S F, Tully D B, et al. Propiconazole-induced cytochrome P450 gene expression and enzymatic activities in rat and mouse liver[J]. Toxicology letters, 2005, 155(2): 277-287.
- [5]. Attema B, Kumm O, Krutáková M, et al. The fungicide propiconazole induces hepatic steatosis and activates PXR in a mouse model of diet-induced obesity[J]. Archives of Toxicology, 2024: 1-19.
- [6]. Zhao F, Cao F, Li H, et al. The effects of a short-term exposure to propiconazole in zebrafish (Danio rerio) embryos[J]. Environmental Science and Pollution Research, 2020, 27: 38212-38220.

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