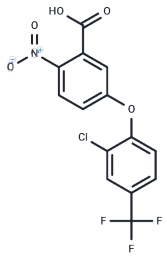
Data Sheet (Cat.No.T40588)

TargetMol

Acifluorfen

Chemical Properties



CAS No. : 50594-66-6

Formula: C14H7ClF3NO5

Molecular Weight: 361.66

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Acifluorfen is a protoporphyrinogen oxidase (PPO) inhibitor herbicide that promotes the accumulation of protoporphyrin IX. It induces liver tumors, liver injury, and cardiac dysfunction in rodents, and causes severe photooxidative damage to pigments and lipids in susceptible plants. It can be used to induce hepatitis and pancreatitis.
Targets(IC50)	Others
In vitro	To examine the link between herbicide efficacy and intrinsic antioxidants, this study explores the impact of Acifluorfen on cucumber (Cucumis sativus L.) cotyledon disc levels of glutathione and ascorbate. Acifluorfen significantly reduces glutathione and ascorbate concentrations by more than 50% in discs exposed to white light (450 microeinsteins per square meter per second) for under 1.5 hours. Additionally, Acifluorfen precipitates rapid ascorbate depletion in plants grown under far-red light, which lack photosynthetic capability [2].
In vivo	Dietary treatment with 2500 ppm Acifluorfen for up to 13 weeks increases Cyp2b10 expression in the livers of wild-type mice, but not in CAR-knockout (CARKO) mice. Microscopically, Acifluorfen treatment-induces cytotoxic changes, including hepatocellular necrosis and inflammation, and causes regenerative changes accompanied by prolonged increases in the numbers of proliferating cell nuclear antigen-positive hepatocytes in WT mice [1]. These results indicated that prolonged cytotoxicity in the liver was a key factor for ACI-induced hepatocarcinogenesis, and that CAR played an important role in ACI-induced liver injury and tumor development in mice.

Solubility Information

Solubility	DMSO: 250 mg/mL (691.26 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Corn Oil: 2.5 mg/mL (6.91 mM),Sonication is recommended. 10% DMSO+90% Saline: 10 mg/mL (27.65 mM),Solution. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.765 mL	13.8251 mL	27.6503 mL
5 mM	0.553 mL	2.765 mL	5.5301 mL
10 mM	0.2765 mL	1.3825 mL	2.765 mL
50 mM	0.0553 mL	0.2765 mL	0.553 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Kuwata K, et al. Involvement of Mouse Constitutive Androstane Receptor in Acifluorfen-Induced Liver Injury and Subsequent Tumor Development. Toxicol Sci. 2016;151(2):271-285.
Kenyon WH, et al. Effects of Acifluorfen on Endogenous Antioxidants and Protective Enzymes in Cucumber (Cucumis sativus L.) Cotyledons. Plant Physiol. 1985;79(3):862-866.