2,4-D

Cat. No.: HY-18572

CAS No.: 94-75-7

Molecular Formula: $C_8H_6Cl_2O_3$

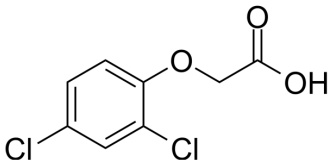
Molecular Weight: 221.04

Target: DNA/RNA Synthesis; Apoptosis

Pathway: Cell Cycle/DNA Damage; Apoptosis

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (452.41 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	4.5241 mL	22.6203 mL	45.2407 mL
5 mM	0.9048 mL	4.5241 mL	9.0481 mL
10 mM	0.4524 mL	2.2620 mL	4.5241 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: ≥ 2.5 mg/mL (11.31 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (11.31 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

2,4-D (2, 4-dichlorophenoxyacetic acid) is a selective herbicide that can be orally active for the control of broad-leaved weeds. 2,4-D can induce apoptosis. 2,4-D inhibits DNA and protein synthesis, thereby preventing normal plant growth and development[1][2][3].

In Vitro

2, 4-D (25-200 μM, 72 h) inhibits the cell viability of A549 and WI38 with IC_{50} values of 126 ± 2.25 μM and 115 ± 4.39 μM, respectively. Induces apoptosis by influencing the cell cycle[2].

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

Cell Viability Assay[2]

Cell Line:	A549, W138
Concentration:	25, 50, 75, 100, 150, 200 μM
Incubation Time:	72 h
Result:	Inhibited cell viability in a dose-dependent manner.

Cell Cycle Analysis[2]

Cell Line:	A549
Concentration:	50, 100, 150 μM
Incubation Time:	72 h
Result:	The G0/G1 population decreased to about 57%, 43% and 31%, respectively.

Apoptosis Analysis[2]

Cell Line:	A549, W138
Concentration:	100, 150 μM
Incubation Time:	72 h
Result:	The early apoptotic population increased to 44% in A549 cells and 57% in WI38 cells, and the late apoptotic population increased to 18% in A549 cells and 10% in WI38 cells.

Western Blot Analysis[2]

Cell Line:	A549, W138
Concentration:	100, 150 μM
Incubation Time:	72 h
Result:	Up-regulated p53 and Bax proteins, down-regulated Bcl-2 and procaspase 3.

In Vivo

2,4-D (100 or 200 mg/kg, gavage for 30 days) has toxic effects on the reproductive system of male rats[3].

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

Animal Model:	Adult Wistar male rats[3]
Dosage:	100 or 200 mg/kg
Administration:	i.g.
Result:	Decreased the testis, seminal vesicles and prostate relative weight. Decreased the number of spermatozoa and sperm motility. Increased the level of FSH and LH.

REFERENCES

[1]. Ganguli A, et al. 2, 4-Dichlorophenoxyacetic acid induced toxicity in lung cells by disruption of the tubulin-microtubule network. Toxicology Research, 2014, 3(2): 118-130.

[2]. Marouani N, et al. Effects of oral administration of 2,4-dichlorophenoxyacetic acid (2,4-D) on reproductive parameters in male Wistar rats. Environ Sci Pollut Res Int. 2017 Jan;24(1):519-526.

[3]. Germaine KJ, et al. Bacterial endophyte-enhanced phytoremediation of the organochlorine herbicide 2,4-dichlorophenoxyacetic acid. FEMS Microbiol Ecol. 2006 Aug;57(2):302-10.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA