Propiolactone

Cat. No.: HY-107931

CAS No.: 57-57-8

Molecular Formula: $C_3H_4O_2$

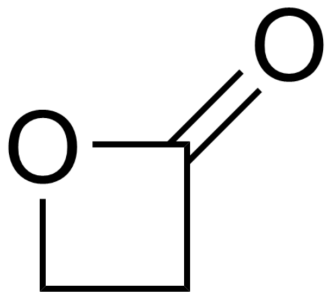
Molecular Weight: 72

Target: SARS-CoV

Pathway: Anti-infection

Storage:

Pure form	-20°C	3 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (1388.89 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	13.8889 mL	69.4445 mL	138.8889 mL
	5 mM	2.7778 mL	13.8889 mL	27.7778 mL
	10 mM	1.3889 mL	6.9444 mL	13.8889 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 (34.72 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (34.72 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (34.72 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Propiolactone (β-propiolactone; 2-Oxetanone) is a viral chemical inactivator that causes the infectious inactivation of viruses. Propiolactone was co-incubated with SARS-CoV at a ratio of 1:1000 (v:v) and used as a bacteriostatic agent to formulate the BPL-inactivated influenza virus vaccine (Flu-BPL)[1][2].

IC_{50} & Target

SARS-CoV-2[1]

In Vitro

Propiolactone (β-propiolactone) can be used for vaccine purification. After cells were harvested by low-speed centrifugation, SARS-CoV was chemically inactivated with Propiolactone (1:1000 v:v). Propiolactone was incubated with

	SARS-CoV for 24 h at 4°C. A second incubation at room temperature was performed to hydrolyze residual propiolactone. and concentration of the vaccine. Following BPL inactivation. a polvethylene glycol-sodium chloride (PEG-NaCl) mixture was added to precipitate the inactivated virus. After cen and concentration of the vaccine. After propiolactone inactivation, a polyethylene glycol-sodium chloride (PEG-NaCl) mixture is added to precipitate the inactivated virus. Finally, Propiolactone (1:10000 v:v) was added as a bacteriostatic agent. Propiolactone-inactivated virus loses infectivity in Vero cells[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Mice were immunized with propiolactone (β-propiolactone)-inactivated influenza A virus (~25 mg total protein per dose; intramuscular injection). SARS is non-lethal in young BALB/c mice after propiolactone inactivation treatment. Although the virus replicated in the respiratory tract of the mice, it was cleared by day 5. Propiolactone treatment yielded 1.5 μg of total hemagglutinin protein, which was negative after infection of mice[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Roberts A, et al. Immunogenicity and protective efficacy in mice and hamsters of a β-propiolactone inactivated whole virus SARS-CoV vaccine. Viral Immunol. 2010 Oct;23(5):509-19

[2]. Kulkarni R, et al. Anti-SARS-CoV-2 IgG antibody response among Indian COVID-19 patients using β-propiolactone-inactivated, whole virus-based indirect ELISA. J Virol Methods. 2021 Jan;287:113996.

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