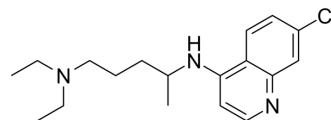


Chloroquine

Cat. No.:	HY-17589A
CAS No.:	54-05-7
Molecular Formula:	C ₁₈ H ₂₆ ClN ₃
Molecular Weight:	319.87
Target:	SARS-CoV; HIV; Toll-like Receptor (TLR); Autophagy; Parasite; Antibiotic
Pathway:	Anti-infection; Immunology/Inflammation; Autophagy
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

Ethanol : 100 mg/mL (312.63 mM; Need ultrasonic)
DMSO : 50 mg/mL (156.31 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	3.1263 mL	15.6314 mL	31.2627 mL
	5 mM	0.6253 mL	3.1263 mL	6.2525 mL
	10 mM	0.3126 mL	1.5631 mL	3.1263 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

- Add each solvent one by one: 50% PEG300 >> 50% saline
Solubility: 10 mg/mL (31.26 mM); Suspended solution; Need ultrasonic and warming and heat to 44°C
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (7.82 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (7.82 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (7.82 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Chloroquine is an antimalarial and anti-inflammatory agent widely used to treat malaria and rheumatoid arthritis. Chloroquine is an autophagy and toll-like receptors (TLRs) inhibitor. Chloroquine is highly effective in the control of SARS-CoV-2 (COVID-19) infection in vitro (EC₅₀=1.13 μM)^{[1][2][3][4]}.

IC₅₀ & Target

Plasmodium	Malaria	TLRs	SARS-COV-2
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	HIV-1
In Vitro	<p>Chloroquine (CHQ, 20 μM) inhibits IL-12p70 release and reduces Th1-priming capacity of activated human monocyte-derived Langerhans-like cells (MoLC).</p> <p>Chloroquine (20 μM) enhances IL-1-induced IL-23 secretion in MoLC and subsequently increases IL-17A release by primed CD4⁺ T cells^[1].</p> <p>Chloroquine (25 μM) suppresses MMP-9 mRNA expression in normoxia and hypoxia in parental MDA-MB-231 cells. Chloroquine has cell-, dose- and hypoxia-dependent effects on MMP-2, MMP-9 and MMP-13 mRNA expression^[2].</p> <p>TLR7 and TLR9 inhibition using IRS-954 or chloroquine significantly reduces HuH7 cell proliferation in vitro^[3].</p> <p>Chloroquine (0.01-100 μM; 48 hours) potently blocked virus infection (vero E6 cells infected with SARS-CoV-2) at low-micromolar concentration (EC_{50}=1.13 μM).</p> <p>Chloroquine blocks virus infection by increasing endosomal pH required for virus/cell fusion, as well as interfering with the glycosylation of cellular receptors of SARS-CoV^[4].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Chloroquine (80 mg/kg, i.p.) does not prevent the growth of the triple-negative MDA-MB-231 cells with high or low TLR9 expression levels in the orthotopic mouse model^[2].</p> <p>TLR7 and TLR9 inhibition using IRS-954 or chloroquine significantly inhibits tumour growth in the mouse xenograft model. HCC development in the DEN/NMOR rat model is also significantly inhibited by Chloroquine^[3].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Nature. 2023 Jun;618(7966):799-807.
- Nature. 2022 Dec;612(7941):725-731.
- Nat Biotechnol. 2022 Dec;40(12):1834-1844.
- Cell Res. 2023 Jul 17.
- Mol Cancer. 2019 Apr 10;18(1):85.

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REFERENCES

- [1]. Said A, et al. Chloroquine promotes IL-17 production by CD4⁺ T cells via p38-dependent IL-23 release by monocyte-derived Langerhans-like cells. *J Immunol*. 2014 Dec 15;193(12):6135-43.
- [2]. Tuomela J, et al. Chloroquine has tumor-inhibitory and tumor-promoting effects in triple-negative breast cancer. *Oncol Lett*. 2013 Dec;6(6):1665-1672.
- [3]. Mohamed FE, et al. Effect of toll-like receptor 7 and 9 targeted therapy to prevent the development of hepatocellular carcinoma. *Liver Int*. 2014 Jul 2. doi: 10.1111/liv.12626.
- [4]. Colson P, et al. Chloroquine and hydroxychloroquine as available weapons to fight COVID-19. *Int J Antimicrob Agents*. 2020;55(4):105932.
- [5]. Savarino A, et al. The anti-HIV-1 activity of chloroquine. *J Clin Virol*. 2001;20(3):131-135.

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

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