

Product Data Sheet

Product Name: Ivermectin

Cat. No.: GC12339

Chemical Properties

Cas. No. 70288-86-7

Chemical Name Ro 5-2807

SMILES C/C([C@@H](O[C@H]1C[C@H](OC)[C@@H](O[C@H]2C[C@H](OC)[C@@H](O)[C@H](C)O2)[C@H](C)O1)[C@@H](C)/C=C/C=C(CO3)/[C@@]([C@@]3([H])[C@H](O)C(C)=C4)(O)[C@@H]4C5=O)=C\C[C@@H]6C[C@H](O5)C[C@@]7(O[C@@]([C@@H](C)CC)([H])[C@@H](C)CC7)O6

Formula C₄₈H₇₄O₁₄

M.Wt 875.09

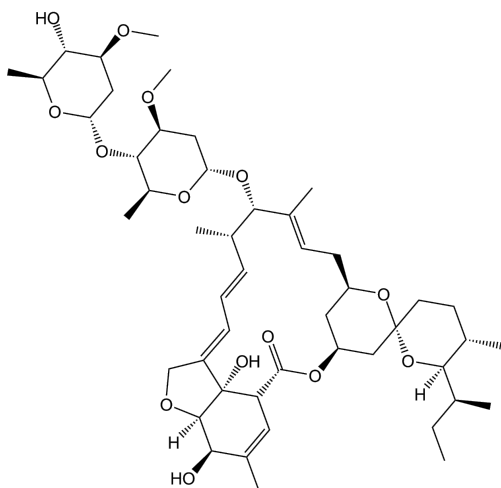
Solubility ≥ 43.7545mg/mL in DMSO

Storage Store at 2-8°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]:

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Cell lines	C6 cells
Preparation Method	C6 cells were seeded at a density of 8×10^3 cells/well in a 96-well plate and cultured in DMEM medium supplemented with 1% fetal bovine serum (FBS) and 1% penicillin and streptomycin for 24h. C6 cells were subsequently treated with different concentrations of Ivermectin (0, 5, 10, 15, and 20 μ M) for 48h. Cell viability was analyzed.
Reaction Conditions	0, 5, 10, 15, and 20 μ M; 48h
Applications	Ivermectin treatment significantly reduced the cell viability of C6 cells in a dose-dependent manner.

Animal experiment [2]:

Animal models	NOD/SCID mice
Preparation Method	Ten million PA-1 cells suspended in 100 μ l of PBS were injected subcutaneously into NOD/SCID mice. After the development of palpable tumors, the mice were randomized into 4 treatment groups (n=10 each group): vehicle control (80%/20% saline/DMSO), Ivermectin at 3mg/kg on alternating days via intraperitoneal injection, cisplatin at 1mg/kg twice per week via intraperitoneal injection. Mice were treated with the drugs for 30 days and then euthanized via CO ₂ inhalation. Tumor length and width were measured every 3 days, and tumor volume was calculated using the formula: width ² ×length /2.
Dosage form	3mg/kg; every other day for 30 days; i.p.
Applications	Ivermectin treatment significantly inhibited tumor growth in the PA-1 xenograft mouse model.

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References:

- [1] Song D, Liang H, Qu B, et al. Ivermectin inhibits the growth of glioma cells by inducing cell cycle arrest and apoptosis in vitro and in vivo[J]. Journal of Cellular Biochemistry, 2019, 120(1): 622-633.
- [2] Zhang X, Qin T, Zhu Z, et al. Ivermectin augments the in vitro and in vivo efficacy of cisplatin in epithelial ovarian cancer by suppressing Akt/mTOR signaling[J]. The American journal of the medical sciences, 2020, 359(2): 123-129.

Background

Ivermectin is a macrolide endectocide with activity against both endoparasites and ectoparasites [1]. Ivermectin disrupts neurotransmission in nerve and muscle cells, causing hyperpolarisation of the neuronal membrane, inducing paralysis of somatic muscles, particularly the pharyngeal pump, killing the parasites [2]. Ivermectin has been widely used to inhibit parasitic infections and kill viruses [3].

In vitro, Ivermectin treatment for 48 hours significantly inhibited the proliferation of C6 cells and U251 cells, with IC₅₀ values of 16.32μM and 14.58μM, respectively [4]. 2.5μM of Ivermectin treatment for 72 hours reduced the proliferation of Pseudorabies virus (PRV) in BHK-21 cells and inhibited the entry of PRV DNA polymerase auxiliary subunit UL42 into the cell nucleus [5].

In vivo, Ivermectin treatment via oral administration at a dose of 0.2mg/kg twice a week for 5 weeks significantly increased the expression level of Cyp 3a11 in the liver of mice and the mRNA level of Cyp 1a1 in the intestine [6]. Intraperitoneal injection of a 3mg/kg dose of Ivermectin every other day for 30 days, which significantly inhibited tumor growth in the ovarian cancer xenograft mouse model, without affecting the body weight of the mice [7].

References:

- [1] Dourmishev, Assen L., Lyubomir A. Dourmishev, and Robert A. Schwartz. "Ivermectin: pharmacology and application in dermatology." International journal of dermatology 44.12 (2005): 981-988.
- [2] Crump A. Ivermectin: enigmatic multifaceted 'wonder' drug continues to surprise and exceed expectations[J]. The Journal of antibiotics, 2017, 70(5): 495-505.
- [3] Johnson-Arbor K. Ivermectin: a mini-review[J]. Clinical Toxicology, 2022, 60(5): 571-575.
- [4] Song D, Liang H, Qu B, et al. Ivermectin inhibits the growth of glioma cells by inducing cell cycle

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arrest and apoptosis in vitro and in vivo[J]. Journal of Cellular Biochemistry, 2019, 120(1): 622-633.

[5] Lv C, Liu W, Wang B, et al. Ivermectin inhibits DNA polymerase UL42 of pseudorabies virus entrance into the nucleus and proliferation of the virus in vitro and vivo[J]. Antiviral research, 2018, 159: 55-62.

[6] Albérich M, Ménez C, Sutra J F, et al. Ivermectin exposure leads to up-regulation of detoxification genes in vitro and in vivo in mice[J]. European journal of pharmacology, 2014, 740: 428-435.

[7] Zhang X, Qin T, Zhu Z, et al. Ivermectin augments the in vitro and in vivo efficacy of cisplatin in epithelial ovarian cancer by suppressing Akt/mTOR signaling[J]. The American journal of the medical sciences, 2020, 359(2): 123-129.

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