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Artesunate

Cat. No.: HY-N0193

CAS No.: 88495-63-0

Molecular Formula: $C_{19}H_{28}O_8$

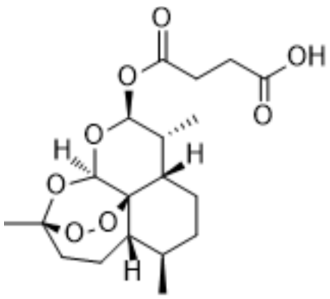
Molecular Weight: 384.42

Target: STAT; Parasite; Virus Protease; Ferroptosis

Pathway: JAK/STAT Signaling; Stem Cell/Wnt; Anti-infection; 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 : 83.33 mg/mL (216.77 mM; Need ultrasonic)

7.5% sodium bicarbonate : 20 mg/mL (52.03 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.6013 mL	13.0066 mL	26.0132 mL
5 mM	0.5203 mL	2.6013 mL	5.2026 mL
10 mM	0.2601 mL	1.3007 mL	2.6013 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: ≥ 2.08 mg/mL (5.41 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (5.41 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (5.41 mM); Clear solution

BIOLOGICAL ACTIVITY

Description Artesunate is an inhibitor of both STAT-3 and exported protein 1 (EXP1).

IC_{50} & Target	Stat-3	EXP1

In Vitro Artesunate is an inhibitor of both STAT-3[1] and exported protein 1 (EXP1)[2]. Artesunate treatment for 24 h causes a

	significant increase in the levels of reactive oxygen species (ROS) in a dose-dependent manner in both cell lines. Moreover, Western blotting shows that the levels ofγ-H2AX are significantly elevated when cancer cells are treated with Artesunate in the higher dose range for 24 h. Artesunate also shows a time-dependent effect on the level of RAD51 in A2780 and HO8910 cells. In two types of non-malignant cells, normal human fibroblasts and immortalized epithelial cells, FTE-187, the level of RAD51 is not altered by Artesunate. In A2780 cells, the level of RAD51 mRNA is indeed decreased by the addition of Artesunate, in a dose-dependent manner. Correspondingly, the promoter activity of RAD51 is significantly inhibited by Artesunate. In contrast, the RAD51 mRNA level in H8910 cells is not affected by Artesunate[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Tumor growth is significantly reduced in the group receiving combined treatment of Artesunate and cisplatin (P<0.01). In comparison, Artesunate alone has no significant effect on the growth of tumor xenografts for both cell lines[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [3]	After treatment with Artesunate for 24 h, cells are harvested and lysed in 1×cell lysis buffer. Total proteins of 15 to 25 μg are separated by SDS-PAGE and transferred to polyvinylidenedifluoride (PVDF) membranes. Membranes are blocked with 5% non-fat milk for 1 to 2 h at room temperature and then probed with primary antibodies and incubated at 4°C overnight. After extensive washing with TBS-T, membranes are incubated with appropriate HRP-conjugated secondary antibody for 1 h at room temperature, and then are detected by Western ECL-enhanced luminol reagent [3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Cell Assay [3]	A2780 and HO8910 cells are cultured in RPMI 1640, Normal human fibroblasts (NHF) in DMEM, and FTE-187 in M199, supplemented with 10% fetal bovine serum, 100 units/mL penicillin, and 100 mg/mL streptomycin. All the cells are incubated in a humidified atmosphere of 95% air and 5% CO_2. Artesunate is applied to the cultured cells at the concentration of 0, 5, 10, 25, or 50 μg/mL for various periods. The reactive oxygen species (ROS) production following Artesunate treatment is determined. Briefly, cells are loaded with 5 μM of CM-H2DCFDA and incubated at 37°C for 20 min after treatment with Artesunate. Cells are resuspended using preserving fluid and analyzed with a FACSCanto II. The peak excitation wavelength for oxidized CM-H2DCFDA is 490 nm and emission is 530 nm[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	Four to six weeks old female athymic nude mice (BALB/c, nu/nu) are used. A2780 and HO8910 cells are harvested and resuspended in 0.1 ml of PBS, 5×10^6 cells/0.2 mL are injected subcutaneously into the left inguinal area of the mice. Two weeks later, mice bearing tumors (~70 mm^3 for A2780 and HO8910) are randomly divided into 4 groups. Artesunate is administered daily via i.p. injection at doses of 50 mg/kg alone for 16 days. The tumor growth is monitored every other day. Tumor volume is determined by the formula $1/2a\times b^2$ where a is the long diameter (mm) and b is the short diameter (mm)[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Biomed Pharmacother. 2024 Jun 14:177:116885.
- Free Radic Biol Med. 2024 Jun 19:S0891-5849(24)00531-8.
- J Nutr Biochem. 2024 Jun 10:109687.
- Int Immunopharmacol. 2021 Apr 29;97:107705.
- Cancers (Basel). 2024 Mar 28, 16(7), 1321.

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REFERENCES

[1]. Ilamathi M, et al. Artesunate as an Anti-Cancer Agent Targets Stat-3 and Favorably Suppresses Hepatocellular Carcinoma. Curr Top Med Chem. 2016;16(22):2453-63.

[2]. Lisewski AM, et al. Supergenomic network compression and the discovery of EXP1 as a glutathione transferase inhibited by artesunate. Cell. 2014 Aug 14;158(4):916-928.

[3]. Wang B, et al. Artesunate sensitizes ovarian cancer cells to cisplatin by downregulating RAD51. Cancer Biol Ther. 2015;16(10):1548-56.

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