Vadimezan

Cat. No.: HY-10964

CAS No.: 117570-53-3

Molecular Formula: $C_{17}H_{14}O_4$

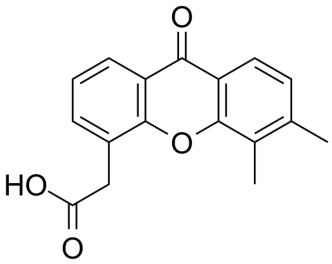
Molecular Weight: 282.29

Target: STING; Influenza Virus; IFNAR

Pathway: Immunology/Inflammation; Anti-infection

Storage:

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 7.14 mg/mL (25.29 mM; Need ultrasonic)
7.5% sodium bicarbonate : 6.67 mg/mL (23.63 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.5425 mL	17.7123 mL	35.4246 mL
	5 mM	0.7085 mL	3.5425 mL	7.0849 mL
	10 mM	0.3542 mL	1.7712 mL	3.5425 mL

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

In Vivo

1. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 5 mg/mL (17.71 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.71 mg/mL (2.52 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 0.71 mg/mL (2.52 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Vadimezan (DMXAA; ASA-404), the tumor vascular disrupting agent (tumor-VDA), is a murine agonist of the stimulator of interferon genes (STING) and also a potent inducer of type I IFNs and other cytokines. Vadimezan has anti-influenza virus H1N1-PR8 activities.

IC_{50} & Target

STING[1], type I IFNs[2]

In Vitro	Vadimezan (DMXAA), the vascular disrupting agent, is a murine agonist of the stimulator of interferon genes (STING) and also a potent inducer of type I IFNs and other cytokines. Vadimezan (DMXAA) has no detrimental effect on 344SQ-ELuc cell viability. It is found that Vadimezan-mediated up regulation of the NF-κB pathway as shown by increased p65 phosphorylation in M2 macrophages[1]. Results demonstrate that Vadimezan (DMXAA)-treated cells are protected from VSV-induced cytotoxicity at all MOIs in contrast to medium-pretreated macrophages. Vadimezan (DMXAA) effectively inhibits growth of both strains of influenza, demonstrating the potential of Vadimezan for treatment of drug-resistant strains of human influenza[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	344SQ-ELuc NSCLC subcutaneous tumors respond dramatically to Vadimezan (DMXAA), with a marked decrease in bioluminescence (BLI) signals post-drug injection. Vadimezan (DMXAA) treatment of 344SQ-ELuc metastases yields no decrease in photon emission rates, with the tumors remaining histologically similar to controls after this treatment. As with the large subcutaneous tumors, Vadimezan (DMXAA) administration to mice with small subcutaneous tumors still leads to ~2-log decreases in photon emission at both 6 and 24 hours[1]. In vivo, Vadimezan (DMXAA) is a more potent inducer of IFN-β mRNA and a relatively poor inducer of TNF-α mRNA. Vadimezan (DMXAA) administration leads to significantly less weight loss in influenza-infected mice[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [1]	M2-polarized macrophages are treated with 20 μg/mL Vadimezan (ASA-404) or DMSO vehicle for 30 min. Cells are then lysed and protein denatured in SDS buffer and samples sent for RPPA analysis. Differential abundance of various proteins and/or their phosphorylation status in response to Vadimezan (ASA-404) is assessed[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Cell Assay [2]	RAW 264.7 macrophages are cultured and plated at 1×10^5 cells/well in a 96-well plate. After overnight incubation at 37°C, cells are treated with medium containing vehicle or Vadimezan (DMXAA) (100 μg/mL). After 6 h, the culture medium is replaced with serum-free DMEM containing VSV at the indicated MOI for 1 h. Cells are then maintained in complete DMEM with 10% FBS. Twenty-four hours later, cells are washed with PBS, fixed with 10% buffered formalin, and rinsed thoroughly with distilled water. Adherent cells are stained with crystal violet[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Male 129/Sv mice (6 to 12 week old) are used in this study. To generate subcutaneous tumors, 5×10^5 344SQ-ELuc cells in 100 μL PBS are injected in both posterior flanks of mice. Tumor growth is monitored every 2 to 4 days via BLI. Once tumors are established (day 10 for systemic metastases; day 7 or day 14 for subcutaneous tumors), mice are given 25 mg/kg of Vadimezan (DMXAA), or DMSO vehicle by i.p. injection. BLI is carried out at 6 and 24 hours [1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Immunity. 2024 Jan 17:S1074-7613(24)00026-8.
- Gastroenterology. 2018 May;154(6):1822-1835.e2.
- Nat Cell Biol. 2023 May;25(5):726-739.
- ACS Nano. 2023 Jan 3.
- Neuron. 2022 Nov 4;S0896-6273(22)00961-8.

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REFERENCES

[1]. Shirey KA, et al. The anti-tumor agent, 5,6-dimethylxanthenone-4-acetic acid (DMXAA), induces IFN-beta-mediated antiviral activity in vitro and in vivo. J Leukoc Biol. 2011 Mar;89(3):351-7.

[2]. Downey CM, et al. DMXAA causes tumor site-specific vascular disruption in murine non-small cell lung cancer, and like the endogenous non-canonical cyclic dinucleotide STING agonist, 2'3'-cGAMP, induces M2 macrophage repolarization. PLoS One. 2014 Jun 18;9

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