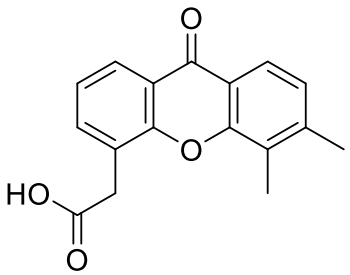
Product data sheet

MedKoo Cat#: 201050 Name: Vadimezan (DMXAA) CAS#: 117570-53-3 Chemical Formula: $C_{17}H_{14}O_4$ Exact Mass: 282.08921 Molecular Weight: 282.29	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.



1. Product description:
Vadimezan, also known as DMXAA and ASA404, is a fused tricyclic analogue of flavone acetic acid with potential antineoplastic activity. Vadimezan induces the cytokines tumor necrosis alpha (TNF-alpha), serotonin and nitric oxide, resulting in hemorrhagic necrosis and a decrease in angiogenesis. This agent also stimulates the anti-tumor activity of tumor-associated macrophages.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	10.9	38.61

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	3.54 mL	17.71 mL	35.42 mL
5 mM	0.71 mL	3.54 mL	7.08 mL
10 mM	0.35 mL	1.77 mL	3.54 mL
50 mM	0.07 mL	0.35 mL	0.71 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Shirey KA, Nhu QM, Yim KC, Roberts ZJ, Teijaro JR, Farber DL, Blanco JC, Vogel SN. 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. doi: 10.1189/jlb.0410216. Epub 2010 Nov 17. PMID: 21084628; PMCID: PMC3040469.

2. Downey CM, Aghaei M, Schwendener RA, Jirik FR. 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(6):e99988. doi: 10.1371/journal.pone.0099988. PMID: 24940883; PMCID: PMC4062468.

In vivo study

1. Shirey KA, Nhu QM, Yim KC, Roberts ZJ, Teijaro JR, Farber DL, Blanco JC, Vogel SN. 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. doi: 10.1189/jlb.0410216. Epub 2010 Nov 17. PMID: 21084628; PMCID: PMC3040469.

2. Downey CM, Aghaei M, Schwendener RA, Jirik FR. 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(6):e99988. doi: 10.1371/journal.pone.0099988. PMID: 24940883; PMCID: PMC4062468.

Product data sheet

7. Bioactivity

Biological target:

Vadimezan (ASA404, NSC 640488, DMXAA) is a vascular disrupting agents (VDA) and competitive inhibitor of DT-diaphorase with Ki of 20 μM and IC50 of 62.5 μM in cell-free assays, respectively.

In vitro activity

In murine macrophages, DMXAA had a minimal effect on NF-κB activation. In comparison, LPS elicited significantly higher levels of NF-κB-dependent proinflammatory cytokines, e.g., TNF-α and IL-1β, which correlated with rapid degradation of IκBα and increased nuclear NF-κB translocation. Furthermore, under conditions in which LPS strongly activated MAPKs within 15 min, DMXAA had no measurable effect over a 2-h time course. Recently, we have found that IFN-β mRNA is similarly up-regulated by DMXAA in primary human monocytes (data not shown).

Reference: J Leukoc Biol. 2011 Mar;89(3):351-7. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/21084628/

In vivo activity

344SQ-ELuc NSCLC subcutaneous tumors respond dramatically to DMXAA, with a marked (~2-logs) decrease in bioluminescence (BLI) signals post-drug injection (Figure 2A–B). This was accompanied by vascular thrombosis and hemorrhage in the tumor periphery, and by the development of extensive central necrosis (Figure 2C). The drop in BLI following DMXAA treatment was not due to direct tumor cell toxicity since DMXAA had no detrimental effect on 344SQ-ELuc cell viability (Figure S3). Instead, tumor BLI signal loss was attributable to greatly diminished blood, and hence luciferin substrate, perfusion which would diminish ATP-dependent light production. While decreased perfusion could conceivably have resulted from reversible vasoconstriction, given the massive tumor necrosis observed, it was more likely that decreased light emission was the result of tumor vessel thrombosis and rupture. RNA transcripts from spleens of mice treated in vivo with DMXAA also demonstrated induction of iNOS and down-regulation of Arg-1 (Figure 4A), as well as diminished anti-Arg-1 immunohistochemical staining (Figure 4B). Importantly, subcutaneous tumor lysates also demonstrated evidence of DMXAA-mediated repolarization (Figure 4C), with diminished Arg-1 staining being evident as early as 6 hours post-DMXAA exposure (Figure 4D). In summary, these results suggest that STING activation can mediate M2-like TAM re-education.

Reference: PLoS One. 2014 Jun 18;9(6):e99988. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/24940883/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.