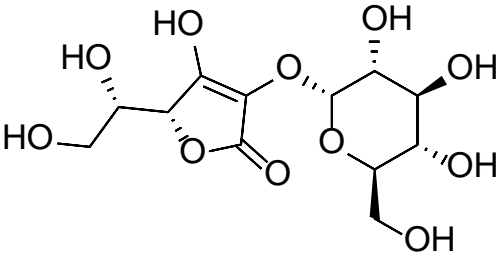


Product data sheet



MedKoo Cat#: 462929 Name: MDN99781 CAS: 129499-78-1 Chemical Formula: C ₁₂ H ₁₈ O ₁₁ Exact Mass: 338.0849 Molecular Weight: 338.265	
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:

MDN99781, also known as 2-O- α -D-Glucopyranosyl-L-ascorbic acid is a glucosylated derivative of L-ascorbic acid that has antioxidant and radioprotective activities. It scavenges 2,2-diphenyl-1-picrylhydrazyl radicals in a cell-free assay. AA-2G inhibits γ -radiation-induced cell death in CHO-10B2 and radiosensitive xrs5 cells, as well as UVC- or broadband UVB-induced cell death in CHO-10B2 and UV-sensitive UV135 cells. It is hydrolyzed to ascorbic acid by α -glucosidase and increases serum levels of ascorbic acid in rats and guinea pigs when administered orally at doses of 19.2 and 96 mg/animal, respectively. AA-2G reverses weight loss and inhibits subcutaneous hemorrhage in guinea pigs fed a vitamin C-deficient diet. This product has no formal name at the moment. For the convenience of communication, a temporary code name was therefore proposed according to MedKoo Chemical Nomenclature (see web page: <https://www.medkoo.com/page/naming>).

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	34.5	101.99
PBS (pH 7.2)	1.0	2.96
Water	96.5	285.28

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.96 mL	14.78 mL	29.56 mL
5 mM	0.59 mL	2.96 mL	5.91 mL
10 mM	0.30 mL	1.48 mL	2.96 mL
50 mM	0.06 mL	0.30 mL	0.59 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. Yi Y, Wu M, Zhou X, Xiong M, Tan Y, Yu H, Liu Z, Wu Y, Zhang Q. Ascorbic acid 2-glucoside preconditioning enhances the ability of bone marrow mesenchymal stem cells in promoting wound healing. *Stem Cell Res Ther.* 2022 Mar 21;13(1):119. doi: 10.1186/s13287-022-02797-0. PMID: 35313962; PMCID: PMC8935805.
2. Maeda J, Allum AJ, Mussallem JT, Froning CE, Haskins AH, Buckner MA, Miller CD, Kato TA. Ascorbic Acid 2-Glucoside Pretreatment Protects Cells from Ionizing Radiation, UVC, and Short Wavelength of UVB. *Genes (Basel).* 2020 Feb 25;11(3):238. doi: 10.3390/genes11030238. PMID: 32106443; PMCID: PMC7140853.

In vivo study

Product data sheet



1. Ito Y, Yamamoto T, Miyai K, Take J, Scherthan H, Rommel A, Eder S, Steinestel K, Rump A, Port M, Shinomiya N, Kinoshita M. Ascorbic acid-2 glucoside mitigates intestinal damage during pelvic radiotherapy in a rat bladder tumor model. *Int J Radiat Biol.* 2022;98(5):942-957. doi: 10.1080/09553002.2021.2009145. Epub 2021 Dec 6. PMID: 34871138.
2. Miura K, Tai A. 2-O- α -D-Glucopyranosyl-L-ascorbic acid as an antitumor agent for infusion therapy. *Biochem Biophys Rep.* 2017 Apr 22;10:232-236. doi: 10.1016/j.bbrep.2017.04.014. PMID: 28955751; PMCID: PMC5614674.

7. Bioactivity

Biological target:

MDN99781, also known as 2-O- α -D-Glucopyranosyl-L-ascorbic acid is a glucosylated derivative of L-ascorbic acid that has antioxidant and radioprotective activities.

In vitro activity

Pretreatment with DMSO, AA, and AA2G (MDN99781) showed comparative protective effects in CHO wild type and radiosensitive xrs5 cells for cell death against ionizing radiation with reducing the number of radiation-induced DNA damages. These results suggest that AA2G protects cells from radiation by acting as a radical scavenger to reduce initial DNA damage, as well as protecting cells from certain UVB wavelengths by filtration.

Reference: *Genes (Basel)*. 2020 Feb 25;11(3):238. <https://pubmed.ncbi.nlm.nih.gov/32106443/>

In vivo activity

AA2G (MDN99781) treatment reduced the intestinal damage (shortening of villi) but did not reduce antitumor effectiveness of radiotherapy against bladder tumors. AA2G treatment significantly increased CD163⁺/CD68⁺ macrophage ratio in the ilea of rats after pelvic irradiation in comparison to the sham irradiated control rats. AA2G treatment increased, albeit not significantly, the CD163⁺/CD68⁺ macrophage ratio in the irradiated bladders relative to the control irradiated rats.

Reference: *Int J Radiat Biol.* 2022;98(5):942-957. <https://pubmed.ncbi.nlm.nih.gov/34871138/>

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.