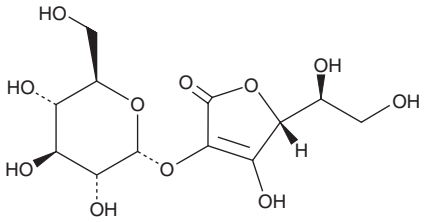
PRODUCT INFORMATION

2-O-α-D-Glucopyranosyl-L-ascorbic Acid

Item No. 31402

CAS Registry No.:	129499-78-1
Synonyms:	AA-2G, Asc2G, Ascorbic Acid 2-glucoside
MF:	$C_{12}H_{18}O_{11}$
FW:	338.3
Purity:	≥95%
UV/Vis.:	λ_{max}: 234 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

2-O-α-D-Glucopyranosyl-L-ascorbic acid is supplied as a crystalline solid. A stock solution may be made by dissolving the 2-O-α-D-glucopyranosyl-L-ascorbic acid in the solvent of choice, which should be purged with an inert gas. 2-O-α-D-Glucopyranosyl-L-ascorbic acid is soluble in the organic solvent DMSO at a concentration of approximately 1 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of 2-O-α-D-glucopyranosyl-L-ascorbic acid can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 2-O-α-D-glucopyranosyl-L-ascorbic acid in PBS, pH 7.2, is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

2-O-α-D-Glucopyranosyl-L-ascorbic acid (AA-2G) is a glucosylated derivative of L-ascorbic acid (Item No. 14656) that has antioxidant and radioprotective activities.[1-3] It scavenges 2,2-diphenyl-1-picrylhydrazyl (DPPH; Item No. 14805) radicals in a cell-free assay (EC_{50} = 61 µM in 60% ethanol).[1] AA-2G (5 mM) 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.[2] 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.[3] AA-2G (19.2 mg/animal per day) reverses weight loss and inhibits subcutaneous hemorrhage in guinea pigs fed a vitamin C-deficient diet.

References

1. Fujinami, Y., Tai, A., and Yamamoto, I. Radical scavenging activity against 1,1-diphenyl-2-picrylhydrazyl of ascorbic acid 2-glucoside (AA-2G) and 6-acyl-AA-2G. *Chem. Pharm. Bull. (Tokyo)* **49(5)**, 642-644 (2001).
2. Maeda, J., Allum, A.J., Mussallem, J.T., *et al.* Ascorbic acid 2-glucoside pretreatment protects cells from ionizing radiation, UVC, and short wavelength of UVB. *Genes (Basel)* **11(3)**, 238 (2020).
3. Yamamoto, I., Suga, S., Mitoh, Y., *et al.* Antiscorbutic activity of L-ascorbic acid 2-glucoside and its availability as a vitamin C supplement in normal rats and guinea pigs. *J. Pharmacobiodyn* **13(11)**, 688-695 (1990).

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