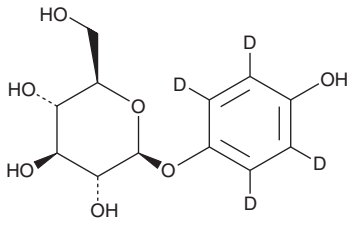
PRODUCT INFORMATION

Arbutin-d_4

Item No. 33289

Formal Name:	(2R,3S,4S,5R,6S)-2-(hydroxymethyl)-6-(4-hydroxyphenoxy-2,3,5,6-d_4) tetrahydro-2H-pyran-3,4,5-triol
Synonym:	β-Arbutin-d_4
MF:	$C_{12}H_{12}D_4O_7$
FW:	276.3
Chemical Purity:	≥98% (Arbutin)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_4); ≤1% d_0
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Synthetic



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

Laboratory Procedures

Arbutin-d_4 is intended for use as an internal standard for the quantification of arbutin (Item No. 26407) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Description

Arbutin is a glycosylated hydroquinone that has been found in *Arctostaphylos* plants and has diverse biological activities, including tyrosinase inhibitory, antioxidant, and anti-inflammatory properties.[1,2] It inhibits human tyrosinase activity in crude tyrosinase solution isolated from human melanocytes (IC_{50}s = 5.7 and 18.9 mM using L-tyrosine and L-DOPA as substrates, respectively) as well as in intact melanocytes (IC_{50} = 0.5 mM).[3] Arbutin (50 µM) inhibits hemolysis induced by the free radical generator AAPH (Item No. 82235) in sheep erythrocytes and inhibits AAPH-induced decreases in cell viability in cultured human skin fibroblasts when used at concentrations greater than 125 µM.[2] In an LPS-induced rat model of acute lung injury, arbutin (50 mg/kg) prevents increases in IL-1β, IL-6, and TNF-α levels in lung tissue and serum.[4] Formulations containing arbutin have been used in the treatment of hyperpigmentation disorders.

References

1. Seo, D.-H., Jung, J.-H., Lee, J.-E., *et al*. Biotechnological production of arbutins (α- and β-arbutins), skin-lightening agents, and their derivatives. *Appl. Microbiol. Biotechnol.* **95(6)**, 1417-1425 (2012).
2. Takebayashi, J., Ishii, R., Chen, J., *et al*. Reassessment of antioxidant activity of arbutin: Multifaceted evaluation using five antioxidant assay systems. *Free Radic. Res.* **44(4)**, 473-478 (2010).
3. Maeda, K. and Fukuda, M. Arbutin: Mechanism of its depigmenting action in human melanocyte culture. *J. Pharmacol. Exp. Ther.* **276(2)**, 765-769 (1996).
4. Ye, J., Guan, M., Lu, Y., *et al*. Arbutin attenuates LPS-induced lung injury via Sirt1/ Nrf2/ NF-κBp65 pathway. *Pulm. Pharmacol. Ther.* **54**, 53-59 (2019).

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