

# PRODUCT INFORMATION



## Arbutin-d<sub>4</sub> Item No. 33289

**Formal Name:** (2R,3S,4S,5R,6S)-2-(hydroxymethyl)-6-(4-hydroxyphenoxy-2,3,5,6-d<sub>4</sub>)tetrahydro-2H-pyran-3,4,5-triol

**Synonym:** β-Arbutin-d<sub>4</sub>

**MF:** C<sub>12</sub>H<sub>12</sub>D<sub>4</sub>O<sub>7</sub>

**FW:** 276.3

**Chemical Purity:** ≥98% (Arbutin)

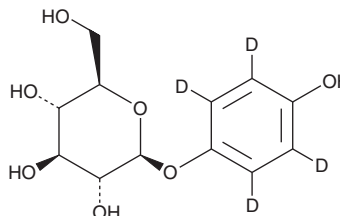
**Deuterium Incorporation:** ≥99% deuterated forms (d<sub>1</sub>-d<sub>4</sub>); ≤1% d<sub>0</sub>

**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<sub>4</sub> 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.<sup>1,2</sup> It inhibits human tyrosinase activity in crude tyrosinase solution isolated from human melanocytes (IC<sub>50</sub>s = 5.7 and 18.9 mM using L-tyrosine and L-DOPA as substrates, respectively) as well as in intact melanocytes (IC<sub>50</sub> = 0.5 mM).<sup>3</sup> 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.<sup>2</sup> 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.<sup>4</sup> 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).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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