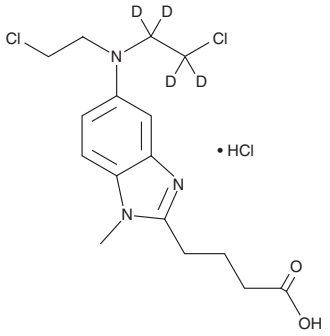
PRODUCT INFORMATION

Bendamustine-d_4 (hydrochloride)

Item No. 31316

CAS Registry No.:	2802569-31-7
Formal Name:	5-[(2-chloroethyl)(2-chloroethyl-1,1,2,2-d_4)amino]-1-methyl-1H-benzimidazole-2-butanoic acid, monohydrochloride
MF:	$C_{16}H_{17}Cl_2D_4N_3O_2$ • HCl
FW:	398.8
Chemical Purity:	≥98% (Bendamustine)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_4); ≤1% d_0
Supplied as:	A 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

Bendamustine-d_4 (hydrochloride) is intended for use as an internal standard for the quantification of bendamustine (Item No. 23693) 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).

Bendamustine-d_4 (hydrochloride) is supplied as a solid. A stock solution may be made by dissolving the bendamustine-d_4 (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Bendamustine-d_4 (hydrochloride) is soluble in methanol and DMSO.

Description

Bendamustine is a purine analog and DNA alkylating agent.[1] It inhibits growth of SKW-3, Reh, CML-T1, BV-173, and HL-60 leukemia cell lines (IC_{50}s = 27.0, 28.6, 15.6, 20.8, and 57.7 µM, respectively) but not MCF-7 and MDA-MB-231 breast cancer cell lines (IC_{50}s = >200 µM for both).[2] It is cytotoxic to patient-derived lymphocytic leukemia (B-CLL) cells (LD_{50}s = 6.8-8.3 mg/ml).[3] Bendamustine (50 mg/kg) inhibits tumor growth by 9 and 96% alone and in combination with ofatumumab, respectively, in a JVM-3 CLL mouse xenograft model.[4] It activates the DNA-damage stress response, the base excision DNA repair pathway, and apoptosis, as well as inhibits mitotic checkpoints and induces mitotic catastrophe.[1] Formulations containing bendamustine have been used to treat CLL and non-Hodgkin lymphoma.

References

1. Leoni, L.M., Bailey, B., Reifert, J., *et al.* Bendamustine (Treanda) displays a distinct pattern of cytotoxicity and unique mechanistic features compared with other alkylating agents. *Clin. Cancer Res.* **14(1)**, 309-317 (2008).
2. Konstantinov, S.M., Kostovski, A., Topashka-Ancheva, M., *et al.* Cytotoxic efficacy of bendamustine in human leukemia and breast cancer cell lines. *J. Cancer Res. Clin. Oncol.* **128(5)**, 271-278 (2002).
3. Schwänen, C., Hecker, T., Hübinger, G., *et al. In vitro* evaluation of bendamustine induced apoptosis in B-chronic lymphocytic leukemia. *Leukemia* **16(10)**, 2096-2105 (2002).
4. Haskova, Z., Whitacre, M.N., Dede, K.A., *et al.* Combination therapy with ofatumumab and bendamustine in xenograft model of chronic lymphocytic leukaemia. *Br. J. Haematol.* **156(3)**, 402-404 (2012).

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