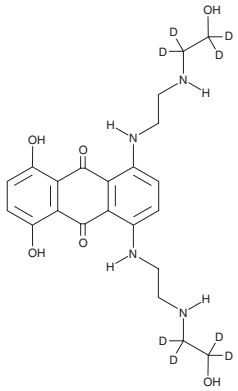
PRODUCT INFORMATION

Mitoxantrone-d_8

Item No. 29414



CAS Registry No.:	1189974-82-0
Formal Name:	1,4-dihydroxy-5,8-*bis*[[2-[(2-hydroxyethyl-1,1,2,2-d_4)amino]ethyl]amino]-9,10-anthracenedione
MF:	$C_{22}H_{20}D_8N_4O_6$
FW:	452.5
Chemical Purity:	≥95% (Mitoxantrone)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_8); ≤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

Mitoxantrone-d_8 is intended for use as an internal standard for the quantification of mitoxantrone (Item No. 14842) 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).

Mitoxantrone-d_8 is supplied as a solid. A stock solution may be made by dissolving the mitoxantrone-d_8 in the solvent of choice, which should be purged with an inert gas. Mitoxantrone-d_8 is soluble in organic solvents such as methanol and DMSO.

Description

Mitoxantrone is an inhibitor of DNA topoisomerase IIα and HIV-1 integrase (IC_{50}s = 5.3 and 3.8 µM, respectively).[1,2] It intercalates into DNA in a cell-free assay when used at a concentration of 2 µM, as well as inhibits DNA synthesis and induces DNA-protein crosslinks *in vitro* in a concentration-dependent manner.[1,3] Mitoxantrone inhibits the growth of K562 leukemia and K562-derived etoposide-resistant K/VP.5 cells (IC_{50}s = 0.42 and 1.68 µM, respectively).[1] It also inhibits the membrane fusion of a mixed population of HEK293T cells expressing either angiotensin-converting enzyme 2 (ACE2) or the extracellular domain of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike glycoprotein, also known as surface glycoprotein.[4] Mitoxantrone (0.2 µM) inhibits the entry of SARS-CoV-2 into Vero E6 cells. Formulations containing mitoxantrone have been used in the treatment of cancer and multiple sclerosis.

References

1. Hasinoff, B.B., Liang, H., Wu, X., *et al.* The structure-based design, synthesis and biological evaluation of DNA-binding bisintercalating bisanthrapyrazole anticancer compounds. *Bioorg. Med. Chem.* **16(7)**, 3959-3968 (2008).
2. Carlson, H.A., Masukawa, K.M., Rubins, K., *et al.* Developing a dynamic pharmacophore model for HIV-1 integrase. *J. Med. Chem.* **43(111)**, 2100-2114 (2000).
3. Fox, M.E. and Smith, P.J. Long-term inhibition of DNA synthesis and the persistence of trapped topoisomerase II complexes in determining the toxicity of the antitumor DNA intercalators mAMSA and mitoxantrone. *Cancer Res.* **50(18)**, 5813-5818 (1990).
4. Zhang, Q., Radvak, P., Lee, J., *et al.* Mitoxantrone modulates a heparan sulfate-spike complex to inhibit SARS-CoV-2 infection. *Sci. Rep.* **12(1)**, 6294 (2022).

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