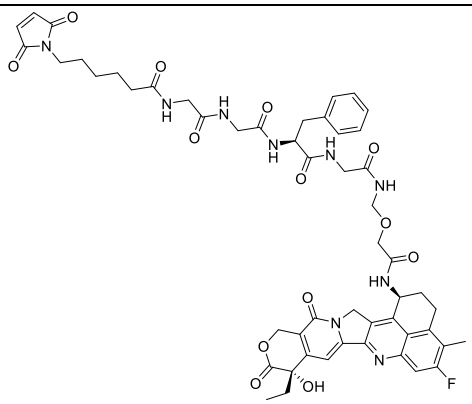
Product data sheet

MedKoo Cat#: 207106 Name: Deruxtecan CAS#: 1599440-13-7 Chemical Formula: $C_{52}H_{56}FN_9O_{13}$ Exact Mass: 1033.3982 Molecular Weight: 1034.0684	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Deruxtecan, a topoisomerase I inhibitor, is an exatecan derivative (DX-8951 derivative) with a cleavable pepetide linker and a maleimide group. The maleimide group in Deruxtecan can react with antibody to form antibody-drug conguates (ADC) such as Trastuzumab deruxtecan (DS-8201a), which is a HER2-targeting antibody–drug conjugate. DS-8201a significantly suppressed tumor growth in an immunocompetent mouse model with human HER2-expressing CT26.WT (CT26.WThHER2) cells. DS-8201a is currently in clinical trials

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	67.5	65.28

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	0.97 mL	4.84 mL	9.67 mL
5 mM	0.19 mL	0.97 mL	1.93 mL
10 mM	0.10 mL	0.48 mL	0.97 mL
50 mM	0.02 mL	0.10 mL	0.19 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Iwata TN, Ishii C, Ishida S, Ogitani Y, Wada T, Agatsuma T. A HER2-Targeting Antibody-Drug Conjugate, Trastuzumab Deruxtecan (DS-8201a), Enhances Antitumor Immunity in a Mouse Model. Mol Cancer Ther. 2018 Jul;17(7):1494-1503. doi: 10.1158/1535-7163.MCT-17-0749. Epub 2018 Apr 27. PMID: 29703841.
2. Takegawa N, Tsurutani J, Kawakami H, Yonesaka K, Kato R, Haratani K, Hayashi H, Takeda M, Nonagase Y, Maenishi O, Nakagawa K. [fam-] trastuzumab deruxtecan, antitumor activity is dependent on HER2 expression level rather than on HER2 amplification. Int J Cancer. 2019 Dec 15;145(12):3414-3424. doi: 10.1002/ijc.32408. Epub 2019 May 24. PMID: 31087550.

In vivo study

1. Iwata TN, Ishii C, Ishida S, Ogitani Y, Wada T, Agatsuma T. A HER2-Targeting Antibody-Drug Conjugate, Trastuzumab Deruxtecan (DS-8201a), Enhances Antitumor Immunity in a Mouse Model. Mol Cancer Ther. 2018 Jul;17(7):1494-1503. doi: 10.1158/1535-7163.MCT-17-0749. Epub 2018 Apr 27. PMID: 29703841.

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2. Takegawa N, Tsurutani J, Kawakami H, Yonesaka K, Kato R, Haratani K, Hayashi H, Takeda M, Nonagase Y, Maenishi O, Nakagawa K. [fam-] trastuzumab deruxtecan, antitumor activity is dependent on HER2 expression level rather than on HER2 amplification. Int J Cancer. 2019 Dec 15;145(12):3414-3424. doi: 10.1002/ijc.32408. Epub 2019 May 24. PMID: 31087550.

7. Bioactivity

Biological target:

Deruxtecan is an ADC drug-linker conjugate composed of a derivative of DX-8951 (DXd) and a maleimide-GGFG peptide linker, used for synthesizing DS-8201 and U3-1402.

In vitro activity

The antitumor activity of [fam-] trastuzumab deruxtecan for CRC with five CRC cell lines that possess different biological characteristics was investigated. The expression of HER2 at both mRNA and protein levels in these various cell lines was first examined. Immunoblot analysis and RT and real-time polymerase chain reaction (PCR) analysis revealed that the amounts of HER2 protein and HER2 mRNA were much smaller in all the CRC cell lines than in NCI-N87 cells. [fam-] trastuzumab deruxtecan attenuated the viability of NCI-N87 cells, consistent with previous results, whereas all five CRC cell lines showed resistance to this agent. These findings suggested that the expression level of HER2 protein might determine sensitivity to [fam-] trastuzumab deruxtecan.

Reference: Int J Cancer. 2019 Dec 15;145(12):3414-3424. https://pubmed.ncbi.nlm.nih.gov/31087550/

In vivo activity

The efficacy of [fam-] trastuzumab deruxtecan in HER2-expressing xenograft tumor models was tested. It was first confirmed that HER2 protein expression levels by immunohistochemistry (IHC) in subcutaneous tumors formed in nude mice by HCT116-Mock, HCT116-H2L or HCT116-H2H cells. Administration of [fam-] trastuzumab deruxtecan at a dose of 3.0 mg/kg markedly inhibited the growth of tumors formed by HCT116-H2L or HCT116-H2H cells but not that of those formed by HCT116-Mock cells. The extents of the inhibition by [fam-] trastuzumab deruxtecan were 60 and 93% compared to PBS vehicle for HCT116-H2L and HCT116-H2H cells, respectively, on day 24. Treatment with [fam-] trastuzumab deruxtecan had no effect on body weight in any of the three groups of mice. These findings thus indicated that the sensitivity of tumors to [fam-] trastuzumab deruxtecan in xenograft models is dependent on HER2 expression level and that such treatment is not associated with overt toxicity.

Reference: Int J Cancer. 2019 Dec 15;145(12):3414-3424. https://pubmed.ncbi.nlm.nih.gov/31087550/