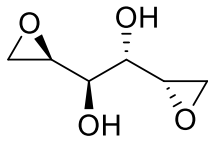
Product data sheet

MedKoo Cat#: 205920 Name: VAL-083 CAS#: 23261-20-3 Chemical Formula: $C_6H_{10}O_4$ Exact Mass: 146.05791 Molecular Weight: 146.14	
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:
VAL-083 is a bi-functional alkylating agent, with potential antineoplastic activity. Upon administration, VAL-083 crosses the blood brain barrier (BBB) and appears to be selective for tumor cells. This agent alkylates and crosslinks DNA which ultimately leads to a reduction in cancer cell proliferation. In addition, VAL-083 does not show cross-resistance to other conventional chemotherapeutic agents and has a long half-life in the brain.

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
DMF	100.0	684.28
Water	50.0	342.14

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	6.84 mL	34.21 mL	68.43 mL
5 mM	1.37 mL	6.84 mL	13.69 mL
10 mM	0.68 mL	3.42 mL	6.84 mL
50 mM	0.14 mL	0.68 mL	1.37 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. Golebiewska A, Hau AC, Oudin A, Stieber D, Yabo YA, Baus V, Barthelemy V, Klein E, Bougnaud S, Keunen O, Wantz M, Michelucci A, Neirinckx V, Muller A, Kaoma T, Nazarov PV, Azuaje F, De Falco A, Flies B, Richart L, Poovathingal S, Arns T, Grzyb K, Mock A, Herold-Mende C, Steino A, Brown D, May P, Miletic H, Malta TM, Noushmehr H, Kwon YJ, Jahn W, Klink B, Tanner G, Stead LF, Mittelbronn M, Skupin A, Hertel F, Bjerkvig R, Niclou SP. Patient-derived organoids and orthotopic xenografts of primary and recurrent gliomas represent relevant patient avatars for precision oncology. Acta Neuropathol. 2020 Dec;140(6):919-949. doi: 10.1007/s00401-020-02226-7. Epub 2020 Oct 3. PMID: 33009951; PMCID: PMC7666297.

In vivo study

1. Golebiewska A, Hau AC, Oudin A, Stieber D, Yabo YA, Baus V, Barthelemy V, Klein E, Bougnaud S, Keunen O, Wantz M, Michelucci A, Neirinckx V, Muller A, Kaoma T, Nazarov PV, Azuaje F, De Falco A, Flies B, Richart L, Poovathingal S, Arns T, Grzyb K, Mock A, Herold-Mende C, Steino A, Brown D, May P, Miletic H, Malta TM, Noushmehr H, Kwon YJ, Jahn W, Klink B, Tanner G, Stead LF, Mittelbronn M, Skupin A, Hertel F, Bjerkvig R, Niclou SP. Patient-derived organoids and orthotopic xenografts of primary and recurrent gliomas represent relevant patient avatars for precision oncology. Acta Neuropathol. 2020 Dec;140(6):919-949. doi: 10.1007/s00401-020-02226-7. Epub 2020 Oct 3. PMID: 33009951; PMCID: PMC7666297.

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7. Bioactivity

Biological target:

VAL-083 is an alkylating agent that creates N7 methylation on DNA.

In vitro activity

In this study's cohort, VAL-083 was significantly more effective than TMZ (Fig. 6a, b) and the response was not dependent on MGMT promoter methylation status (Fig. 6c). The response was similar in treatment-naïve and relapsed organoids (Supplementary Fig. 6c, online resource), suggesting that VAL-083 is able to overcome TMZ resistance.

Reference: Acta Neuropathol. 2020; 140(6): 919–949. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7666297/

In vivo activity

VAL-083 monotherapy led to a dramatic reduction in tumor growth (Fig. 6e), an effect which was only mildly accentuated by combined treatment. Histological assessment of tumor-containing mouse brains confirmed the strong reduction in tumor volume upon VAL-083 treatment (Supplementary Fig. 6e, online resource). This was paralleled by an increase in DNA damage in tumor cells, determined by H2AX phosphorylation (H2AX-P) (Supplementary Fig. 6f, online resource). Limited H2AX-P was also seen in normal brain cells close to the meninges and the subventricular zone, but to a much lower extent than in tumor cells. In summary, this study shows that VAL-083 has a consistently favorable drug profile against GBM; thus, representing a promising candidate for GBM treatment either alone or in combination with antiangiogenic compounds.

Reference: Acta Neuropathol. 2020; 140(6): 919–949. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7666297/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.