# Product data sheet

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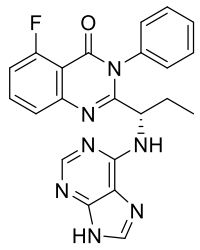
|---|---|
| MedKoo Cat#: 200586<br>Name: Idelalisib (CAL-101)<br>CAS#: 870281-82-6<br>Chemical Formula: $C_{22}H_{18}FN_7O$<br>Exact Mass: 415.1557<br>Molecular Weight: 415.423 |  |
| Product supplied as: | Powder |
| Purity (by HPLC): | ≥ 98% |
| Shipping conditions | Ambient temperature |
| Storage conditions: | Powder: -20°C 3 years; 4°C 2 years. |
| | In solvent: -80°C 3 months; -20°C 2 weeks. |

**1. Product description:**

Idelalisib, also known as CAL-101, is a PI3K-delta inhibitor with potential immunomodulating and antineoplastic activities. CAL-101 inhibits the production of the second messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3), preventing the activation of the PI3K signaling pathway and thus inhibiting tumor cell proliferation, motility, and survival. Unlike other isoforms of PI3K, PI3K-delta is expressed primarily in hematopoietic lineages. The targeted inhibition of PI3K-delta is designed to preserve PI3K signaling in normal, non-neoplastic cells. CAL-101 has [EC(50)] = 8nM.

**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 | 55.9 | 134.56 |
| DMF | 30.0 | 72.22 |
| DMF:PBS (pH 7.2) (1:1) | 0.5 | 1.20 |
| Ethanol | 24.5 | 58.98 |

**4. Stock solution preparation table:**

| **Concentration / Solvent Volume / Mass** | **1 mg** | **5 mg** | **10 mg** |
|---|---|---|---|
| 1 mM | 2.41 mL | 12.04 mL | 24.07 mL |
| 5 mM | 0.48 mL | 2.41 mL | 4.81 mL |
| 10 mM | 0.24 mL | 1.20 mL | 2.41 mL |
| 50 mM | 0.05 mL | 0.24 mL | 0.48 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. Rohrbacher L, Brauchle B, Ogrinc Wagner A, von Bergwelt-Baildon M, Bücklein VL, Subklewe M. The PI3K∂-Selective Inhibitor Idelalisib Induces T- and NK-Cell Dysfunction Independently of B-Cell Malignancy-Associated Immunosuppression. Front Immunol. 2021 Mar 15;12:608625. doi: 10.3389/fimmu.2021.608625. PMID: 33790890; PMCID: PMC8005712.
2. Li K, Yi P, Luo H, Li J, Meng L, Tang M, Zeng W, Yang S, Wang W. Inhibitory effect of PI3Kδ inhibitor idelalisib on proliferation of human myeloid leukemia cells and the reversal effect on drug resistance to adriamycin. Zhong Nan Da Xue Xue Bao Yi Xue Ban. 2020 Dec 28;45(12):1389-1397. English, Chinese. doi: 10.11817/j.issn.1672-7347.2020.190728. PMID: 33472993.

In vivo study

1. Barrachina MN, Izquierdo I, Hermida-Nogueira L, Morán LA, Pérez A, Arroyo AB, García-Barberá N, González-Conejero R, Troitiño S, Eble JA, Rivera J, Martínez C, Loza MI, Domínguez E, García Á. The PI3Kδ Inhibitor Idelalisib Diminishes Platelet

Function and Shows Antithrombotic Potential. Int J Mol Sci. 2021 Mar 24;22(7):3304. doi: 10.3390/ijms22073304. PMID: 33804911; PMCID: PMC8037016.
2. Yue D, Sun X. Idelalisib promotes Bim-dependent apoptosis through AKT/FoxO3a in hepatocellular carcinoma. Cell Death Dis. 2018 Sep 17;9(10):935. doi: 10.1038/s41419-018-0960-8. PMID: 30224718; PMCID: PMC6141589.

**7. Bioactivity**

Biological target:

Idelalisib (CAL-101; GS-1101) is a p110δ inhibitor with an IC50 of 2.5 nM.

In vitro activity

In this study, idelalisib reduced NK-cell proliferation. Moreover, PI3K∂ inhibition led to a decrease in the percentage of cytotoxic NK cells, which also translated into reduced target cell killing by NK cells. Two different apoptosis pathways are affected. Idelalisib impaired cell death through secretion of cytolytic molecules, as well as cell death via the Fas–FasL pathway. NK cells are an important part of the innate immune system and play a key role in the defense against infections. Taken together, this study's data demonstrate a decrease NK-cell proliferation and cytolytic activity by idelalisib and that this might contribute to the increased frequency of infectious events observed in clinical trials.

Reference: Front Immunol. 2021; 12: 608625. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8005712/

In vivo activity

To investigate more in detail the potential of Idelalisib as antithrombotic, in vivo tail bleeding and a ferric chloride-induced arterial thrombosis assays were performed in a murine model. Mice treated with Idelalisib (20 mg/kg) showed a plasma concentration of 5.1 ± 2.0 µM after 1 h (Supplementary Figure S1). In the tail bleeding assay in mice (Figure 4A), Idelalisib caused a 3.5-fold increase in bleeding time (5.5 ± 3.5 min vs. 1.63 ± 0.88 min of vehicle) (Figure 4B). Accordingly, the hemoglobin content of blood collected during bleeding in Idelalisib-treated mice was significantly higher than in untreated animals (Figure 4C). Importantly, 9 out of 11 (80%) mice treated with Idelalisib showed bleeding times <10 min. By comparison, 66% of mice treated with ASA or clopidogrel, established antiplatelet therapies, bled over 10 min (Supplementary Figure S2). FeCl3-induced arterial thrombosis was undertaken to further assess the antithrombotic potential of Idelalisib (Figure 4D). Interestingly, drug-treated mice (20 mg/kg) displayed significantly longer occlusion times than control mice, indicating significant protection against thrombosis in this experimental model (Figure 4E).

Reference: Int J Mol Sci. 2021 Apr; 22(7): 3304. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8037016/

*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.*