# Product data sheet

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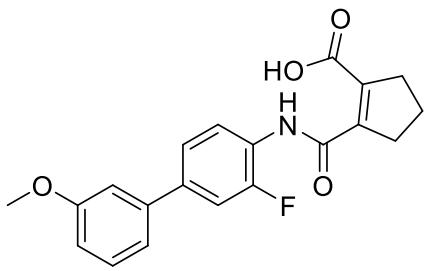
|---|---|
| MedKoo Cat#: 510319<br>Name: Vidofludimus<br>CAS#: 717824-30-1 (free acid)<br>Chemical Formula: $C_{20}H_{18}FNO_4$<br>Exact Mass: 355.122<br>Molecular Weight: 355.36 |  |
| Product supplied as: | Powder |
| Purity (by HPLC): | ≥ 98% |
| Shipping conditions | Ambient temperature |
| Storage conditions: | Powder: -20°C 3 years; 4°C 2 years. |
| | In solvent: -80°C 3 months; -20°C 2 weeks. |

**1. Product description:**

Vidofludimus, also known as 4SC 101 or SC12267, is a novel orally active and potent DHODH inhibitor. In vitro, 4SC-101 is a potent inhibitor of human DHODH, inhibits lymphocyte proliferation, and uniquely blocks phytohemagglutinin-stimulated IL-17 production by lymphocytes. In vivo, oral administration of 4SC-101 effectively improved both chronic DSS and acute TNBS colitis in mice. 4SC-101 may have potential for the treatment of intestinal inflammation. Dihydroorotate dehydrogenase (DHODH) is a key enzyme involved in pyrimidine biosynthesis. DHODH is a known target for the treatment of autoimmune diseases.

**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 | 57.0 | 160.40 |

**4. Stock solution preparation table:**

| Concentration / Solvent Volume / Mass | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 2.81 mL | 14.07 mL | 28.14 mL |
| 5 mM | 0.56 mL | 2.81 mL | 5.63 mL |
| 10 mM | 0.28 mL | 1.41 mL | 2.81 mL |
| 50 mM | 0.06 mL | 0.28 mL | 0.56 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. Kulkarni OP, Sayyed SG, Kantner C, Ryu M, Schnurr M, Sárdy M, Leban J, Jankowsky R, Ammendola A, Doblhofer R, Anders HJ. 4SC-101, a novel small molecule dihydroorotate dehydrogenase inhibitor, suppresses systemic lupus erythematosus in MRL-(Fas)lpr mice. Am J Pathol. 2010 Jun;176(6):2840-7. doi: 10.2353/ajpath.2010.091227. Epub 2010 Apr 22. PMID: 20413687; PMCID: PMC2877845.
2. Hahn F, Wangen C, Häge S, Peter AS, Dobler G, Hurst B, Julander J, Fuchs J, Ruzsics Z, Überla K, Jäck HM, Ptak R, Muehler A, Gröppel M, Vitt D, Peelen E, Kohlhof H, Marschall M. IMU-838, a Developmental DHODH Inhibitor in Phase II for Autoimmune Disease, Shows Anti-SARS-CoV-2 and Broad-Spectrum Antiviral Efficacy In Vitro. Viruses. 2020 Dec 5;12(12):1394. doi: 10.3390/v12121394. PMID: 33291455; PMCID: PMC7762174.

In vivo study

1. Kulkarni OP, Sayyed SG, Kantner C, Ryu M, Schnurr M, Sárdy M, Leban J, Jankowsky R, Ammendola A, Doblhofer R, Anders HJ. 4SC-101, a novel small molecule dihydroorotate dehydrogenase inhibitor, suppresses systemic lupus erythematosus in MRL-(Fas)lpr mice. Am J Pathol. 2010 Jun;176(6):2840-7. doi: 10.2353/ajpath.2010.091227. Epub 2010 Apr 22. PMID: 20413687; PMCID: PMC2877845.

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**7. Bioactivity**

Biological target:

Vidofludimus(4SC-101; SC12267) is a novel immunosuppressive drug that inhibits DHODH and inhibits IL-17 in vitro.

In vitro activity

The antiviral activity of IMU-838 was determined by RT-qPCR using infectious supernatants of SARS-CoV-2-infected Vero cells. Cells were used for infection with SARS-CoV-2 at an MOI of 0.0002 for 2–3 days, before supernatants were collected and subjected to the determination of extracellular viral load by RT-qPCR. In all cases of the slightly modified settings in replicates 1–3, the EC50 values of IMU-838 remained in the low micromolar range (6.0 ± 5.0 µM to 10.0 ± 9.0 µM), so that a mean of 7.6 ± 5.8 µM was calculated (Figure 3A). This result was further illustrated by the use of the remaining cell layers for assessing the drug-mediated inhibition of intracellular viral load by an immunostaining of cell layers in the in-cell ELISA (Figure 3B). This finding was supported by the in-cell IF data described above, indicating the IMU-838-mediated inhibition of viral spike protein and RNA production, with a concentration-dependent reduction of both signals, as compared to the DMSO infection-positive and mock-infected negative controls (Figure 1C). These data indicated a pronounced in vitro anti-SARS-CoV-2 activity of the developmental drug IMU-838.

Reference: Viruses. 2020 Dec; 12(12): 1394. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7762174/

In vivo activity

Female MRl lpr/lpr mice were treated with 4SC-101, CYC, or vehicle from 12 to 22 weeks of age because at 12 weeks of age MRLlpr/lpr mice show first signs of proliferative immune complex glomerulonephritis and proteinuria. After 10 weeks of treatment, vehicle-treated MRLlpr/lpr mice showed diffuse proliferative immune complex glomerulonephritis characterized by glomerular IgG deposits, mesangioproliferative glomerulonephritis, considerable tubular atrophy, and interstitial fibrosis (Figure 4A). 4SC-101 reduced the glomerular IgG deposits and improved the lupus-like immune complex glomerulonephritis in female MRLlpr/lpr mice in a dose dependent manner (Figure 4A). The chronicity score, a composite score of glomerular and interstitial scarring, was significant for the 300 mg/kg 4SC-101 group. 300 mg/kg 4SC-101 reduced renal macrophage and T cell infiltrates (Figure 4C). 4SC-101 treatment was also associated with an increase of GFR (Glomerular filtration rate) and a decrease of albuminuria in a dose-dependent manner (Figure 5, A and B). It is concluded that the dose-dependent impact of 4SC-101 on systemic autoimmunity translates into anti-inflammatory effects on lupus nephritis and improvement of renal dysfunction in MRLlpr/lpr mice.

Reference: Am J Pathol. 2010 Jun; 176(6): 2840–2847. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2877845/

*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.*