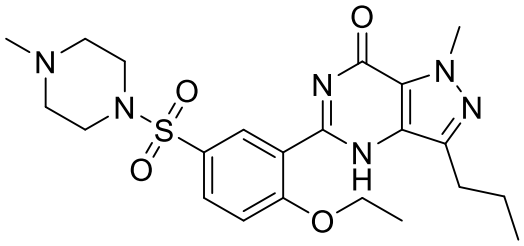
Product data sheet

MedKoo Cat#: 330158 Name: Sildenafil free base CAS#: 139755-83-2 (free base) Chemical Formula: $C_{22}H_{30}N_6O_4S$ Exact Mass: 474.2049 Molecular Weight: 474.58	
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:
Sildenafil is a selective inhibitor of phosphodiesterase type 5 (PDE5) which catalyzes the hydrolysis of 3',5'-cyclic guanosine monophosphate (cGMP). As a PDE5 inhibitor, Sildenafil has been reported to enhance neuro-, synapto- and angiogenesis in rat models of stroke and also is reported to be a mild vasodilator. Sildenafil has also been shown to prevent indomethacin-induced small intestinal ulceration formation through an NO/cGMP- dependent mechanism.

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	5	10.54
DMSO	50	105.36

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.11 mL	10.54 mL	21.07 mL
5 mM	0.42 mL	2.11 mL	4.21 mL
10 mM	0.21 mL	1.05 mL	2.11 mL
50 mM	0.04 mL	0.21 mL	0.42 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. Iwasaki T, Onda T, Honda H, Hayashi K, Shibahara T, Nomura T, Takano M. Over-expression of PDE5 in Oral Squamous Cell Carcinoma - Effect of Sildenafil Citrate. Anticancer Res. 2021 May;41(5):2297-2306. doi: 10.21873/anticanres.15005. PMID: 33952455.
2. Mostafa T. In vitro sildenafil citrate use as a sperm motility stimulant. Fertil Steril. 2007 Oct;88(4):994-6. doi: 10.1016/j.fertnstert.2006.11.182. Epub 2007 Feb 20. PMID: 17316632.

In vivo study

1. Quintavalla F, Menozzi A, Pozzoli C, Poli E, Donati P, Wyler DK, Serventi P, Bertini S. Sildenafil improves clinical signs and radiographic features in dogs with congenital idiopathic megaoesophagus: a randomised controlled trial. Vet Rec. 2017 Apr 22;180(16):404. doi: 10.1136/vr.103832. Epub 2017 Feb 10. PMID: 28188161.
2. Soares DM, Ramos-Perez F, Araújo SS, Correia Leite de Marcelos PG, Pontual AA, Perez D. Sildenafil citrate on experimental periodontitis in rats: Microtomographic and histological analyses. Oral Dis. 2018 Sep;24(6):1073-1082. doi: 10.1111/odi.12846. Epub 2018 Jun 7. PMID: 29480944.

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7. Bioactivity

Biological target:

Sildenafil is a potent PDE5 inhibitor with an IC50 of 5.22 nM.

In vitro activity

The specific inhibition of PDE5 by sildenafil citrate may be an effective chemotherapeutic strategy for oral squamous cell carcinoma (OSCC) treatment. Elevated PDE5 expression was observed in all OSCC cell lines. After sildenafil citrate treatment, there was decreased cell viability, invasion rate, and migration. A significant correlation was observed between elevated PDE5 expression and lymphatic infiltration in OSCC tissues.

Reference: Anticancer Res. 2021 May;41(5):2297-2306. https://pubmed.ncbi.nlm.nih.gov/33952455/

In vivo activity

In dogs with congenital idiopathic megaoesophagus (CIM), sildenafil significantly reduced regurgitation episodes and increased weight gain compared to controls. There was a significant decrease in relative oesophageal diameter in the sildenafil group. Sildenafil citrate may offer a novel therapeutic approach for treating dogs with CIM by alleviating clinical and radiographic signs through its effects on lower oesophageal sphincter tone.

Reference: Vet Rec. 2017 Apr 22;180(16):404. https://pubmed.ncbi.nlm.nih.gov/28188161/

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.