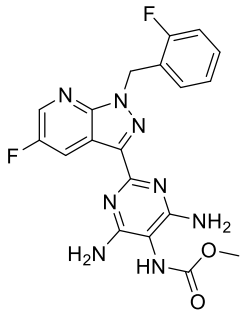
Product data sheet

MedKoo Cat#: 319687 Name: Vericiguat CAS#: 1350653-20-1 Chemical Formula: $C_{19}H_{16}F_2N_8O_2$ Exact Mass: 426.1364 Molecular Weight: 426.39	
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:
Vericiguat, also known as BAY1021189 or BAY10-21189, is a potent and orally active sGC stimulator (Soluble Guanylate Cyclase Stimulator). Direct stimulation of soluble guanylate cyclase (sGC) is emerging as a potential new approach for the treatment of renal disorders. sGC catalyzes the formation of cyclic guanosine monophosphate (cGMP), deficiency of which is implicated in the pathogenesis of chronic kidney disease (CKD).

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	60.0	140.7

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.35 mL	11.73 mL	23.45 mL
5 mM	0.47 mL	2.35 mL	4.69 mL
10 mM	0.23 mL	1.17 mL	2.35 mL
50 mM	0.05 mL	0.23 mL	0.47 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. Follmann M, Ackerstaff J, Redlich G, Wunder F, Lang D, Kern A, Fey P, Griebenow N, Kroh W, Becker-Pelster EM, Kretschmer A, Geiss V, Li V, Straub A, Mittendorf J, Jautelat R, Schirok H, Schlemmer KH, Lustig K, Gerisch M, Knorr A, Tinel H, Mondritzki T, Trübel H, Sandner P, Stasch JP. Discovery of the Soluble Guanylate Cyclase Stimulator Vericiguat (BAY 1021189) for the Treatment of Chronic Heart Failure. J Med Chem. 2017 Jun 22;60(12):5146-5161. doi: 10.1021/acs.jmedchem.7b00449. Epub 2017 Jun 12. PMID: 28557445.

In vivo study

1. Follmann M, Ackerstaff J, Redlich G, Wunder F, Lang D, Kern A, Fey P, Griebenow N, Kroh W, Becker-Pelster EM, Kretschmer A, Geiss V, Li V, Straub A, Mittendorf J, Jautelat R, Schirok H, Schlemmer KH, Lustig K, Gerisch M, Knorr A, Tinel H, Mondritzki T, Trübel H, Sandner P, Stasch JP. Discovery of the Soluble Guanylate Cyclase Stimulator Vericiguat (BAY 1021189) for the Treatment of Chronic Heart Failure. J Med Chem. 2017 Jun 22;60(12):5146-5161. doi: 10.1021/acs.jmedchem.7b00449. Epub 2017 Jun 12. PMID: 28557445.

7. Bioactivity
Biological target:

Product data sheet

Vericiguat (BAY1021189) is a potent, orally available and soluble guanylate cyclase stimulator.

In vitro activity

The stimulation of sGC by vericiguat (24) was examined with a recombinant CHO cell line overexpressing rat sGC. 24 stimulated the sGC reporter cell line concentration dependently, with an EC50 of 1005 ± 145 nM. In the presence of the NO donor S-nitroso-N-acetyl-d,l-penicillamine (SNAP) (30 and 100 nM), the EC50 value shifted to 39.0 ± 5.1 and 10.6 ± 1.7 nM, respectively. In the presence of ODQ, pretreatment of the sGC reporter cell line with 10 μM ODQ for 3 h resulted in a significantly reduced efficacy of 24, with an EC50 of 256 ± 40 nM being observed.

Reference: J Med Chem. 2017 Jun 22;60(12):5146-5161. http://dx.doi.org/10.1021/acs.jmedchem.7b00449

In vivo activity

Chronic oral treatment with 3 or 10 mg/kg vericiguat (24) qd resulted in a significant attenuation of blood pressure increase during the course of the study. However, the overall rise of blood pressure increase was not halted in the 3 and 10 mg/kg treatment groups (Figure 4). With respect to kidney damage, 24 treatment at 3 or 10 mg/kg led to a significant reduction in kidney injury molecule Kim-1 and osteopontin expression which are used as biomarkers for renal injury and dysfunction (data not shown). In addition, proteinuria was significantly and dose dependently decreased in the treatment groups, also suggesting a functional improvement of the kidneys (Figure 6). Treatment with 24 resulted in a significant and dose-dependent increase in survival rates. In the 3 and 10 mg/kg qd treatment groups, the rat survival rate was 70% and 90%, respectively, at the study end. In contrast, the survival rate in the placebo group was only 25% after 21 days (Figure 7).

Reference: J Med Chem. 2017 Jun 22;60(12):5146-5161. http://dx.doi.org/10.1021/acs.jmedchem.7b00449