Riociguat

Cat. No.: HY-14779

CAS No.: 625115-55-1

Molecular Formula: $C_{20}H_{19}FN_8O_2$

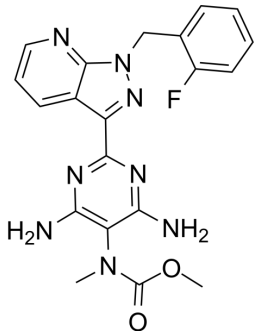
Molecular Weight: 422.42

Target: Guanylate Cyclase

Pathway: GPCR/G Protein

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 20 mg/mL (47.35 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.3673 mL	11.8366 mL	23.6731 mL
5 mM	0.4735 mL	2.3673 mL	4.7346 mL
10 mM	0.2367 mL	1.1837 mL	2.3673 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.92 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.92 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.92 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Riociguat is an oral stimulator of soluble guanylate cyclase (sGC) used in the treatment of pulmonary hypertension.

IC_{50} & Target

sGC[1]

In Vitro

Riocigua stimulates the recombinant sGC concentration dependently from 0.1 to 100 μM with a two-fold to 73-fold effect by an NO-independent but haem-dependent mechanism[1]. Riociguat inhibits platelet function in washed platelets but not in whole blood, and exerts no direct effects on contractility and relaxation of cardiac myocytes[2].

	MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Riociguat (10 mg/kg/d, p.o.) partially reverses the pulmonary arterial hypertension, the right heart hypertrophy and the structural remodelling of the lung vasculature in chronic treatment of hypoxic mice and MCT-injected rats[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [1]	Mice[1] For chronic intervention studies four groups of mice are used: control mice exposed for 35 days to normoxic gas (n=10); mice exposed for 21 days to hypoxic gas (n=10); mice exposed for 35 days to hypoxic gas and who receives the vehicle (2% methylcellulose solution) from day 21 to day 35 (n=10); and mice exposed for 35 days to hypoxic gas and who receives BAY 63-2521 (10 mg/kg) once a day by oral application (n=10) from day 21 to day 35. For continuous measurement of Prvs and cardiac frequency by radiotelemetry, a separate group of mice is exposed for 35 days to hypoxic gas and receives BAY 63-2521 (10 mg/kg) once a day by oral application from day 21 to day 35. In order to investigate vascular reactivity in isolated mouse lungs, an additional two groups of animals are investigated: control mice (n=12) and animals exposed for 21 days to hypoxic conditions (n=12). Rats[1] Rats are randomised for chronic BAY 63-2521 treatment, 21 days after MCT injection. The experimental groups includes rats that receives BAY 63-2521 (10 mg/kg) or vehicle (2% methylcellulose solution) by oral application, once per day. Rats are examined daily and subjected to haemodynamic measurements and histological assessment at day 35. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Commun. 2018 Oct 16;9(1):4301.
- Diabetes. 2018 Apr;67(4):607-623.
- Br J Pharmacol. 2023 Apr 6.
- Br J Pharmacol. 2019 Jul;176(13):2131-2145.
- Antioxidants. 2021, 10(2), 155.

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REFERENCES

[1]. Schermuly RT, et al. Expression and function of soluble guanylate cyclase in pulmonary arterial hypertension. Eur Respir J. 2008 Oct;32(4):881-91.

[2]. Schermuly RT, et al. Riociguat for the treatment of pulmonary hypertension. Expert Opin Investig Drugs. 2011 Apr;20(4):567-76.

[3]. Donda K, et al. Riociguat prevents hyperoxia-induced lung injury and pulmonary hypertension in neonatal rats without effects on long bone growth. PLoS One. 2018 Jul 10;13(7):e0199927.

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