Leritrelvir

Cat. No.: HY-153121

CAS No.: 2923310-64-7

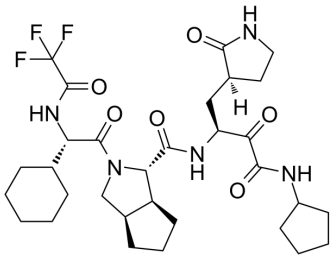
Molecular Formula: $C_{31}H_{44}F_3N_5O_6$

Molecular Weight: 639.71

Target: SARS-CoV

Pathway: Anti-infection

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Leritrelvir (RAY1216) is an orally active SARS-CoV-2 main protease slow-tight inhibitor with a K_i of 8.6 nM[1].

IC_{50} & Target

Ki: 8.6 nM (SARS-CoV-2 main protease)[1]

In Vitro

Leritrelvir (RAY1216) has a drug-target residence time of 104 min[1].
Leritrelvir is covalently attached to the catalytic Cys145 through the α-ketoamide warhead[1].
Leritrelvir (0-1000 nM; 72 h) shows antiviral activities against SARS-CoV-2 wild type ancestral strain and variants[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	Vero E6 cells inoculated with SARS-CoV-2 WT, Alpha, Beta, Delta, Omicron BA.1 and Omicron 247 BA.5 strains
Concentration:	0-1000 nM
Incubation Time:	72 h
Result:	The half-maximal effective concentration (EC50) values against different SARS-CoV-2 variants were 95 nM (WT), 130 nM (Alpha), 277 nM (Beta), 97 nM (Delta), 86 nM (Omicron BA.1) and 158 nM (Omicron BA.5), respectively.

In Vivo

Leritrelvir (RAY1216 (150-600 mg/kg/day; i.g.; 5 days) effectively prolongs survival of SARS-CoV-2 infected mice[1].
Compound pharmacokinetics parameters in different animal species[1]

Compound	Species	dose (mg/kg)	C_{max} (nM)	T_{max} (h)	AUC(0-last) (nM•h)	Cl (mL/min/kg)	Vd_{ss} (L/kg)	$T_{1/2}$ (h)	oral F (%)
	Mouse	3.0 (IV)	-	-	7789	10	1.4	3.8	-
		10 (PO)	1287	2.0	5698	-	-	2.6	22

RAY1216	rat	2.0 (IV)	-	-	4505	12.5	1.1	2.2	-
		10 (PO)	916	0.9	7429	-	-	4.3	33
	cynomolgus macaque	1.0 (IV)	-	-	1157	22.5	1.0	0.9	-
		5.0 (PO)	102	1.5	458	-	-	14.9	8

C_{max}: the maximum observed concentration of the drug collected in bodily material from subjects in a clinical study
T_{max}: the time it takes to reach the maximum concentration or time to C_{max}
AUC: “Area Under the Curve” and represents the total exposure of the drug experienced by the subject in a clinical study
Cl: total plasma clearance
Vd_{ss}: Steady state volume of distribution
$T_{1/2}$: Half-time is the time it takes for half the drug concentration to be eliminated
oral (F%): Oral bioavailability
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Female human ACE2 transgenic C57BL/6 mouse, SARS-CoV-2 infection model[1]
Dosage:	150, 300 and 600 mg/kg/day
Administration:	Intragastric administration, 5 days
Result:	Protected mice infected with SARS-CoV-2 by 100%, 43% and 14% at 600, 300 and 150 mg/kg, respectively. Decreased viral titres in lungs significantly compared with the infection-only group. Reduced virus induced pathology.

Animal Model:	Male CD-1 mouse, male SD rat and male cynomolgus macaque[1]
Dosage:	1-10 mg/kg
Administration:	PO or IV (Pharmacokinetic Analysis)
Result:	Showed promising human pharmacokinetics profile.

REFERENCES

[1]. Chen X, et al. Inhibition mechanism and antiviral activity of an α-ketoamide based SARS-CoV-2 main protease inhibitor. bioRxiv, 2023: 2023.03. 09.531862.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA