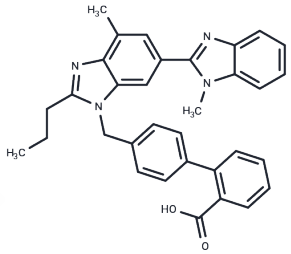
Data Sheet (Cat.No.T1570)

TargetMol

Telmisartan

Chemical Properties



CAS No. : 144701-48-4

Formula: C33H30N4O2

Molecular Weight: 514.62

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Telmisartan (BIBR 277) is an Angiotensin 2 Receptor Blocker. The mechanism of action of telmisartan is as an Angiotensin 2 Receptor Antagonist.
Targets(IC50)	RAAS,Autophagy
In vitro	In mice fed with a high-carbohydrate, high-fat diet, Telmisartan significantly reduced the accumulation of visceral fat and decreased the size of fat cells, surpassing the effects seen with valsartan. This reduction is associated with a significant decrease in liver triglyceride levels. Additionally, Telmisartan promoted an increase in calorie expenditure and prevented diet-induced weight gain.
In vivo	Telmisartan acts as a selective partial agonist for PPARγ (EC50= 4.5 μM), achieving 25% -30% of the maximal activation effects seen with full agonists such as pioglitazone and rosiglitazone. In Hep3B cells, Telmisartan reduces both baseline and AGE-induced RAGE protein expression, and dose-dependently inhibits AGE-induced ROS production, subsequently inducing CRP gene and protein expression. It dose-dependently increases mRNA levels of PPARgamma target genes, such as AP2 and lipoprotein in adipocytes, both differentiating and fully differentiated. In differentiated adipocytes, Telmisartan decreases mRNA levels of type 1 11beta-hydroxysteroid dehydrogenase. It triggers adipogenic differentiation in 3T3-L1 cells and reduces ACC2 expression in mouse muscle myotubes to 60%-70%. Unlike candesartan (another ARB), Telmisartan dose-dependently downregulates RAGE mRNA levels, and effectively promotes the differentiation of 3T3-L1 preadipocytes.
Cell Research	Telmisartan is prepared as a 10 mM stock solution in DMSO. Cell proliferation is assayed using the CCK-8 cell counting kit. Briefly, 5×103 cells are seeded into each well of a 96-well plate and cultured in 100 μL of RPMI-1640 supplemented with 10% FBS. After 24 h, ARBs (telmisartan, irbesartan, losartan, and valsartan at 0, 1, 10, or 100 μM) or vehicle is added to each well, and cells are cultured for an additional 48 h. CCK-8 reagent (10 μL) is added to each well, and the plates are incubated at 37°C for 3 h. The absorbance is measured at 450 nm using a microplate reader.

Solubility Information

Solubility	DMSO: 5.15 mg/mL (10.01 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.9432 mL	9.7159 mL	19.4318 mL
5 mM	0.3886 mL	1.9432 mL	3.8864 mL
10 mM	0.1943 mL	0.9716 mL	1.9432 mL
50 mM	0.0389 mL	0.1943 mL	0.3886 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

Benson SC, et al. Hypertension, 2004, 43(5), 993-1002.
Gabor-Worwa E, Kowal-Chwast A, Gaud N, et al.Uridine 5′-Diphospho-glucuronosyltransferase 1A3 (UGT1A3) Prediction of Hepatic Clearance of Organic Anion Transporting Polypeptide 1B3 (OATP1B3) Substrate Telmisartan by Glucuronidation Using In Vitro–In Vivo Extrapolation (IVIVE).European Journal of Drug Metabolism and Pharmacokinetics.2024: 1-11.
Yoshida T, et al. Diabetologia, 2006, 49(12), 3094-3099.
Fujimoto M, et al. FEBS Lett, 2004, 576(3), 492-497.
Sugimoto K et al. Hypertension, 2006, 47(5), 12003-12009.
Torika N, et al. Intranasal telmisartan ameliorates brain pathology in five familial Alzheimer's disease mice. Brain Behav Immun. 2017 Apr 3.
Aswar U, et al. Telmisartan attenuates diabetes induced depression in rats. Pharmacol Rep. 2017 Apr;69(2):358-364.
Fujihara S, et al. The angiotensin II type 1 receptor antagonist telmisartan inhibits cell proliferation and tumor growth of esophageal adenocarcinoma via the AMPKα/mTOR pathway in vitro and in vivo. Oncotarget. 2017 Jan 31;8(5):8536-8549.