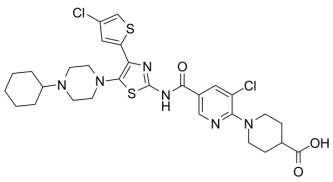
Avatrombopag

Cat. No.:	HY-13463
CAS No.:	570406-98-3
Molecular Formula:	$C_{29}H_{34}Cl_2N_6O_3S_2$
Molecular Weight:	649.65
Target:	Thrombopoietin Receptor
Pathway:	Immunology/Inflammation
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 8.33 mg/mL (12.82 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.5393 mL	7.6965 mL	15.3929 mL
5 mM	0.3079 mL	1.5393 mL	3.0786 mL
10 mM	0.1539 mL	0.7696 mL	1.5393 mL

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

BIOLOGICAL ACTIVITY

Description

Avatrombopag (AKR-501) is an orally active, nonpeptide thrombopoietin (TPO) receptor agonist (EC_{50}=3.3 nM). Avatrombopag mimics the biological activities of TPO. Avatrombopag increases platelet production by activating the intracellular signaling system, and promotes production of platelets and megakaryocytes from hemopoietic precursor cells. Avatrombopag is a substrate of cytochrome P450 (CYP) 2C9 and CYP3A[1][2][3].

IC_{50} & Target

EC50: 3.3 nM (TPO receptor)[1]

In Vitro

Avatrombopag (E5501; AKR-501) specifically targets the TPO receptor and stimulated megakaryocytopoiesis throughout the development and maturation of megakaryocytes just as recombinant human TPO (rhTPO) did[1].

Avatrombopag (0-100 nM) supports the proliferation of TPO receptor expressing Ba/F3 cell in a concentration-dependent fashion. Avatrombopag (0-3 μM) induces tyrosine phosphorylation of STAT3 and STAT5, and threonine phosphorylation of ERK in the cells, as did rhTPO[1].

Avatrombopag promotes megakaryocyte colony formation from human CB $CD34^+$ cells in a concentration-dependent fashion. The EC_{50} is 25 nM for Avatrombopag and the maximum activity of Avatrombopag is similar to that of rhTPO[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Proliferation Assay[1]

Cell Line:	Ba/F3 cells
Concentration:	0.003 μM, 0.03 μM, 0.3 μM, 3 μM
Incubation Time:	
Result:	Increased the proliferation of TPO receptor expressing Ba/F3 cell in a concentration-dependent fashion.

Western Blot Analysis[1]

Cell Line:	Ba/F3 cells
Concentration:	0.003 μM, 0.03 μM, 0.3 μM, 3 μM
Incubation Time:	15 minutes
Result:	Induced tyrosine phosphorylation of STAT3 and STAT5, and threonine phosphorylation of ERK in the cells.

In Vivo

Avatrombopag (0.3-3 mg/kg; p.o.; daily for 14 days) increases the number of human platelets in NOD/SCID mice transplanted with human FL $CD34^+$ cells[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	NOD/SCID mice (transplanted with human FL CD34+cells)[1]
Dosage:	0.3, 1, and 3 mg/kg
Administration:	P.o.; daily for 14 days
Result:	Dose-dependently increased the number of human platelets, resulting in approximately a 2.7-fold increase at 1 mg/kg/d and a 3.0-fold increase at 3 mg/kg/d on day 14 after the start of administration.

CUSTOMER VALIDATION

- Nature. 2023 Mar;615(7950):127-133.
- J Clin Invest. 2022 Jan 27;e149856.
- J Thromb Haemost. 2022 May 27.

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REFERENCES

[1]. Fukushima-Shintani M, et al. AKR-501 (YM477) a novel orally-active thrombopoietin receptor agonist. Eur J Haematol. 2009;82(4):247-254.

[2]. Xu H, et al. Avatrombopag for the treatment of thrombocytopenia in patients with chronic liver disease. Expert Rev Clin Pharmacol. 2019 Sep;12(9):859-865.

[3]. Nomoto M, et al. Pharmacokinetic/pharmacodynamic drug-drug interactions of avatrombopag when coadministered with dual or selective CYP2C9 and CYP3A interacting drugs. Br J Clin Pharmacol. 2018;84(5):952-960.

Caution: Product has not been fully validated for medical applications. For research use only.

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