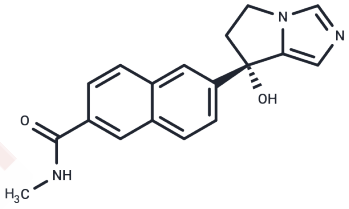
Data Sheet (Cat.No.T6051)

TargetMol

Orteronel

Chemical Properties



CAS No. : 566939-85-3

Formula: C18H17N3O2

Molecular Weight: 307.35

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Orteronel ((S)-Orteronel)(TAK-700) was selected as a candidate for clinical evaluation. orteronel (TAK-700) is currently in phase III clinical trials for the treatment of castration-resistant prostate cancer.
Targets(IC50)	Cytochromes P450
In vitro	In monkey adrenal cells, orteronel suppresses ACTH-induced DHEA and androstenedione production, achieving IC50 values of 110 nM and 130 nM, respectively. Additionally, it significantly reduces DHEA synthesis in the human adrenocortical tumor line H295R, with an IC50 of 37 nM[1]. Orteronel demonstrates potent inhibition of both rat and human steroid 17,20-lyase, displaying IC50 values of 54 nM and 38 nM, accordingly. Importantly, it does not markedly impact other CYP isoforms, including 11-hydroxylase and CYP3A4. However, it notably exerts a stronger inhibitory effect on 17,20-lyase activity in microsomes expressing human CYP isoforms, with an IC50 of 19 nM, distinguishing its specificity compared to other CYP isoforms[2].
In vivo	Orteronel administered orally at a dosage of 1 mg/kg demonstrates effective pharmacokinetic properties, characterized by a peak concentration time (Tmax) of 1.7 hours, a maximum concentration (Cmax) of 0.147 μg/mL, a half-life (t1/2) of 3.8 hours, and an area under the curve (AUC0-24 hours) of 0.727 μg/mL[1]. Additionally, this dosage significantly lowers serum testosterone and dehydroepiandrosterone (DHEA) levels in cynomolgus monkeys[2].
Kinase Assay	Rat 11-hydroxylase activity is measured according to a method described for side-chain cleavage activity previously with some modifications. The reaction mixture contained 200 mM mannitol, 4.5 mM HEPES, 2.3 mM potassium phosphate (pH 7.4), 0.1 mM EDTA·2 K, 0.03% BSA (crystallized), 4.5 mM NADPH, 11 mM calcium chloride, 4 μg of mitochondria protein, 10 nM [1,2-3H]-hydroxy-11-deoxycorticosterone (11-deoxycortisol) (NEN, dissolved in 0.02% Tween-80), and 1-1000 nM test compounds in a total volume of 150 μL. The concentrations of reagents are expressed as the final concentration in the reaction mixture. The test compounds are serially diluted with dimethylformamide, and 1.5 μL is added directly to the reaction mixture. After 30 min incubation at 37°C the reaction is terminated by addition of 400 μL of ethyl acetate and 100 μL of distilled water, then vortexed for 30 s and briefly centrifuged. Three hundred μLs of the organic phase is transferred to a new tube and evaporated until dry using nitrogen gas. The steroids are dissolved with 30 μL of ethyl acetate and the whole volume is applied to silica gel TLC plates. The substrate and the products (11-

Kinase Assay	deoxycortisol and cortisol) are separated in the toluene-acetone (7:2) solvent system.

Solubility Information

Solubility	H2O: <1 mg/mL, Ethanol: 8 mg/mL (26.03 mM),Sonication is recommended. DMSO: 61 mg/mL (198.47 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween-80+45% Saline: 1.67 mg/mL (5.43 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.2536 mL	16.2681 mL	32.5362 mL
5 mM	0.6507 mL	3.2536 mL	6.5072 mL
10 mM	0.3254 mL	1.6268 mL	3.2536 mL
50 mM	0.0651 mL	0.3254 mL	0.6507 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.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Yamaoka M, et al. Orteronel (TAK-700), a novel non-steroidal 17,20-lyase inhibitor: effects on steroid synthesis in human and monkey adrenal cells and serum steroid levels in cynomolgus monkeys. J Steroid Biochem Mol Biol. 2012 Apr;129(3-5):115-28.