Product Datasheet

LDK378

Catalog No. **BP-01830** · CAS **1032900-25-6** · Form **free base** · Physical state **solid** · Color **white to off-white** · Version **1.0** · Revision **2026-09-08**

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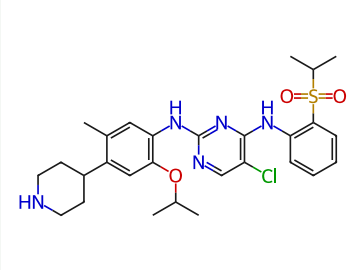
Target	Research area
Anaplastic lymphoma kinase (ALK); Insulin Receptor; IGF-1R	**Metabolic Disease; Inflammation/Immunology; Cancer**

Molecular formula	$C_{28}H_{36}ClN_5O_3S$
Molecular weight	**558.1350**

STRUCTURE



DESCRIPTION

Ceritinib (LDK378) is a selective, orally bioavailable, and ATP-competitive ALK tyrosine kinase inhibitor with an IC50 of 200 pM. Ceritinib (LDK378) also inhibits IGF-1R, InsR, and STK22D with IC50 values of 8, 7, and 23 nM, respectively. Ceritinib (LDK378) shows great antitumor potency.

BIOLOGICAL ACTIVITY

In Vitro

Ceritinib also inhibits RET (IC50=400 nM), FGFR3 (IC50=430 nM), LCK (IC50=560 nM), JAK2 (IC50=610 nM), Aurora (IC50=660 nM), LYN (50=840 nM), EGFR (IC50=900 nM), and FGFR4 (IC50=950 nM).

Ceritinib retains high potency against the ALK enzymatic activity with an IC50 value of 200 pM and shows only strong inhibition against IGF-1R, InsR, and STK22D out of a panel of 46 kinases with a minimum selectivity of 70-fold. In Ba/F3 cells transfected with various kinases, Ceritinib inhibits ALK activity with an IC50 value of 40.7 nM and had IC50 values of >100 nM against all other kinases tested. Ceritinib (LDK378) shows potent antiproliferative activity with an IC50 value of 22.8 nM in Karpas 299 human non-Hodgkin’s Ki-positive large cell lymphoma carrying the NPM-ALK fusion gene and 26 nM in Ba/F3 cells transfected with the NPM-ALK fusion gene. Ceritinib also shows good selectivity over wild-type Ba/F3 cells (IC50>2 μM) and Ba/F3 cells transfected with Tel-InsR gene (IC50=320 nM).

In Vivo

Ceritinib has an excellent pharmacokinetics profile in rodents and non-rodents with an oral bioavailability of >50%. Ceritinib demonstrates dose-dependent tumor growth inhibition and achieved partial tumor regression in the Karpas 299 rat xenograft model with daily administration but is capable of achieving complete tumor regression in the H2228 NSCLC rat xenograft model, which carries the EML4-ALK fusion gene. In both models, Ceritinib is well tolerated in animals. Ceritinib is further assessed for its ADME profile and is found to have a relatively good

metabolic stability in liver microsomes, modest CYP3A4 inhibition, some hERG inhibition with an IC50 value of 46 μM in hERG patch clamp experiments, but no evidence of QTc prolongation in both dog and monkey telemetry studies.

SOLUBILITY

Soluble in DMSO

REFERENCES

[1]. Marsilje TH, et al. Synthesis, structure-activity relationships, and in vivo efficacy of the novel potent and selective anaplastic lymphoma kinase (ALK) inhibitor 5-chloro-N2-(2-isopropoxy-5-methyl-4-(piperidin-4-yl)phenyl)-N4-(2-(isopropylsulfonyl)phenyl)pyrimidine-2,4-diamine (LDK378) currently in phase 1 and phase 2 clinical trials. J Med Chem. 2013 Jul 25;56(14):5675-90.

[2]. Chen J, et al. LDK378: a promising anaplastic lymphoma kinase (ALK) inhibitor. J Med Chem. 2013 Jul 25;56(14):5673-4.

[3]. Tucker ER, et al. Immunoassays for the quantification of ALK and phosphorylated ALK support the evaluation of on-target ALK inhibitors in neuroblastoma. Mol Oncol. 2017 Aug;11(8):996-1006.

[4]. Rothschild SI. Ceritinib-a second-generation ALK inhibitor overcoming resistance in ALK-rearranged non-small celllung cancer. Transl Lung Cancer Res. 2014 Dec;3(6):379-81.