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产品名称：Bay 41-4109
产品别名：Bayer 41-4109

生物活性：

Description	BAY 41-4109 is a potent inhibitor of human hepatitis B virus (HBV) with an IC50 of 53 nM.
IC_{50} & Target	IC50&Target: 53 nM (HBV)[1]
In Vitro	BAY 41-4109 is able to both accelerate and misdirect capsid assembly in vitro. Preformed capsids are stabilized by BAY 41-4109, up to a ratio of one inhibitor molecule per two dimers[2]. BAY 41-4109 is equally effective at inhibiting HBV DNA release and the cytoplasmic HBcAg level, with IC50s of 32.6 and 132 nM in HepG2.2.15 cells, respectively. HBV DNA and HBcAg are inhibited in a dose-dependent manner, indicating that the anti-HBV mechanisms are associated with and dependent on the rate of HBcAg inhibition[3].
In Vivo	BAY 41-4109 reduces viral DNA in the liver and in the plasma dose-dependently with efficacy comparable to 3TC. BAY 41 -4109 reduces hepatitis B virus core antigen (HBcAg) in livers of HBV-transgenic mice. Pharmacokinetic studies in mice have shown rapid absorption, a bioavailability of 30% and dose-proportional plasma concentrations, about 60% in rats and dogs[1].BAY41-4109 inhibits virus production in vivo by a mechanism that targets the viral capsid[2].
Solvent&Solubility	***In Vitro:*** **DMSO : 100 mg/mL** (**252.68 mM;** Need ultrasonic) **H_2O : < 0.1 mg/mL** (insoluble)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.5268 mL	12.6339 mL	25.2678 mL
	5 mM	0.5054 mL	2.5268 mL	5.0536 mL
	10 mM	0.2527 mL	1.2634 mL	2.5268 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

In Vivo:

请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 In Vitro 方式配制澄清的储备液，再依次添加助溶剂：

——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶

1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline

Solubility: ≥ 2.5 mg/mL (6.32 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (6.32 mM，饱和度未知) 的澄清溶液。

以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀；向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。

References	[1]. Weber O, et al. Inhibition of human hepatitis B virus (HBV) by a novel non-nucleosidic compound in a transgenic mouse model. Antiviral Res. 2002 May;54(2):69-78. [2]. Stray SJ, et al. BAY 41-4109 has multiple effects on Hepatitis B virus capsid assembly. J Mol Recognit. 2006 Nov-Dec;19(6):542-8. [3]. Wu GY, et al. Inhibition of hepatitis B virus replication by Bay 41-4109 and its association with nucleocapsid disassembly. J Chemother. 2008 Aug;20(4):458-67.

实验参考：

Cell Assay	Cellular metabolism is evaluated by MTT colorimetry. HepG2.2.15 cells are plated at a density of 2×10^3 cells per well in 96-well plates. After 8 d of treatment with different concentrations of each antiviral compound, 20 μL of MTT solution (5 g/L) are added to each well and incubated at 37°C for 4 h. Next, 150 μL of DMSO is added and stirred for 10 min to dissolve the crystals. Absorbance values are recorded at 490 nm by using an ELISA reader. The MTT values are calculated using the curve regression equation[3].
Animal Administration	Mice: The HBV-transgenic mice are used in the study. Compounds (BAY 41-4109) are formulated as a suspension in 0.5% Tylose and administered per os to mice two times/day for a 28 day period. The 0.5% Tylose serves as a placebo. Six hours after the last treatment, the animals are sacrificed and livers are removed and immediately frozen for subsequent analysis. Blood is obtained by cardiac puncture of the anesthesized animals[1].
References	[1]. Weber O, et al. Inhibition of human hepatitis B virus (HBV) by a novel non-nucleosidic compound in a transgenic mouse model. Antiviral Res. 2002 May;54(2):69-78. [2]. Stray SJ, et al. BAY 41-4109 has multiple effects on Hepatitis B virus capsid assembly. J Mol Recognit. 2006 Nov-Dec;19(6):542-8. [3]. Wu GY, et al. Inhibition of hepatitis B virus replication by Bay 41-4109 and its association with nucleocapsid disassembly. J Chemother. 2008 Aug;20(4):458-67.