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产品名称：TCS-PIM-1-4a
产品别名：SMI-4a

生物活性：		
Description	TCS-PIM-1-4a (SMI-4a) is a pan-Pim kinases inhibitor that blocks mTORC1 activity via activation of AMPK. TCS-PIM-1-4a kills a wide range of both myeloid and lymphoid cell lines (IC50 values ranging from 0.8 μM to 40 μM)[1][2].	
IC_{50} & Target	Pim[1]	
In Vitro	TCS-PIM-1-4a (10 μM; 24-48 hours; 6812/2 cells and Jurkat cells) treatment increases the population of cells in the G1 phase from 44.3% to 68.4% and from 56.2% to 67.1% in 6812/2 and Jurkat, respectively. S-phase cells are decreased in 6812/2, whereas only small changes are seen in Jurkat cells consistent with the lesser G1 block[1]. TCS-PIM-1-4a (5 μM; 6 hours; 6812/2 cells and Jurkat cells) induces cell death by the induction of apoptosis[1]. TCS-PIM-1-4a (5 μM; 4-8 hours; 6812/2 cells and Jurkat cells) prevents the increase in 4E-BP1 protein levels and inhibits mTOR-directed phosphorylation on Thr37/46[1].	
	Cell Cycle Analysis[1]	
	Cell Line:	6812/2 cells and Jurkat cells
	Concentration:	10 μM
	Incubation Time:	24 hours, 48 hours
	Result:	Induced cell-cycle arrest.
	Apoptosis Analysis[1]	
	Cell Line:	6812/2 cells and Jurkat cells
	Concentration:	5 μM
	Incubation Time:	6 hours
	Result:	Led to an increase in the number of the cells positive for annexin V and negative for PI from 8.25% in the control to 21.85%.
	Western Blot Analysis[1]	
	Cell Line:	6812/2 cells and Jurkat cells
	Concentration:	10 μM
	Incubation Time:	4 hours, 8 hours
	Result:	Prevented the increase in 4E-BP1 protein levels and inhibited mTOR-directed phosphorylation on Thr37/46.
In Vivo	TCS-PIM-1-4a (SMI-4a; 60 mg/kg; oral gavage; twice daily; for 21 days; nu/nu nude mice) treatment causes a significant delay in the tumor growth without any change in the weight, blood counts, or chemistries[1].	
	Animal Model:	18 Nu/nu nude mice with 6812/2 murine pre–T-LBL cells[1]
	Dosage:	60 mg/kg
	Administration:	Oral gavage; twice daily; for 21 days
	Result:	Caused a significant delay in the tumor growth.
	In Vitro:	

Solvent&Solubility

DMSO : ≥ 100 mg/mL (365.99 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.6599 mL	18.2996 mL	36.5992 mL
5 mM	0.7320 mL	3.6599 mL	7.3198 mL
10 mM	0.3660 mL	1.8300 mL	3.6599 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 (9.15 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (9.15 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。

2.请依序添加每种溶剂： 10% DMSO→ 90% (20% SBE-β-CD in saline)

Solubility: ≥ 2.5 mg/mL (9.15 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (9.15 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 900 μL 20% 的 SBE-β-CD 生理盐水水溶液中，混合均匀。

3.请依序添加每种溶剂： 10% DMSO →90% corn oil

Solubility: ≥ 2.5 mg/mL (9.15 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (9.15 mM，饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。

以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中，混合均匀。

References

[1]. Lin YW, Beharry ZM, Hill EG, et al. A small molecule inhibitor of Pim protein kinases blocks the growth of precursor T-cell lymphoblastic leukemia/lymphoma. Blood. 2010 ;115(4):824-33.

[2]. Beharry Z, Mahajan S, Zemskova M,et al. The Pim protein kinases regulate energy metabolism and cell growth. Proc Natl Acad Sci U S A. 2011;108(2):528-33.