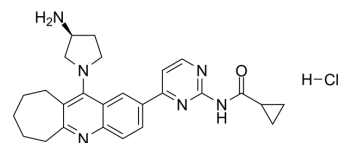


ZLMT-12

Cat. No.:	HY-151436
CAS No.:	2841473-39-8
Molecular Formula:	C ₂₆ H ₃₁ ClN ₆ O
Molecular Weight:	479.02
Target:	CDK; Cholinesterase (ChE); Apoptosis
Pathway:	Cell Cycle/DNA Damage; Neuronal Signaling; Apoptosis
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	<p>ZLMT-12 (compound 35), tacrine derivatives, is a potent, orally active CDK2/9 inhibitor with IC₅₀ values of 0.002 and 0.011 μM for CDK9 and CDK2, respectively. ZLMT-12 has a weak inhibitory effect on AChE (IC₅₀=19.023 μM) and BChE (IC₅₀=2.768 μM). ZLMT-12 has low toxicity and antiproliferative activity. ZLMT-12 induces apoptosis and arrests the cell cycle in the S phase and G2/M phase^[1].</p>																			
IC₅₀ & Target	CDK9 0.002 μM (IC ₅₀)	CDK2 0.011 μM (IC ₅₀)	BChE 2.768 μM (IC ₅₀)	AChE 19.023 μM (IC ₅₀)																
In Vitro	<p>ZLMT-12 (compound 35; 500 nM; 72 h) has antiproliferative activity in cancer cells^[1]. ZLMT-12 (500 nM; 72 h) induces apoptosis and arrests the cell cycle in the S phase and G2/M phase^[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[1]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>HCT116, SW480, A549, and MCF-7 cells</td> </tr> <tr> <td>Concentration:</td> <td>500 nM</td> </tr> <tr> <td>Incubation Time:</td> <td>72 hours</td> </tr> <tr> <td>Result:</td> <td>Inhibited cell proliferative with GI₅₀ values of 0.029, 0.328, 0.051, and 0.109 μM for HCT116, SW480, A549, and MCF-7 cells, respectively.</td> </tr> </table> <p>Apoptosis Analysis^[1]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>HCT116 cells</td> </tr> <tr> <td>Concentration:</td> <td>10 and 20 nM</td> </tr> <tr> <td>Incubation Time:</td> <td>48 hours</td> </tr> <tr> <td>Result:</td> <td>Increased apoptotic cells rate from 9.22% in the control to 23.77% at 10 nM and increased apoptotic cells rate to 46.2% at 20 nM.</td> </tr> </table> <p>Cell Cycle Analysis^[1]</p>				Cell Line:	HCT116, SW480, A549, and MCF-7 cells	Concentration:	500 nM	Incubation Time:	72 hours	Result:	Inhibited cell proliferative with GI ₅₀ values of 0.029, 0.328, 0.051, and 0.109 μM for HCT116, SW480, A549, and MCF-7 cells, respectively.	Cell Line:	HCT116 cells	Concentration:	10 and 20 nM	Incubation Time:	48 hours	Result:	Increased apoptotic cells rate from 9.22% in the control to 23.77% at 10 nM and increased apoptotic cells rate to 46.2% at 20 nM.
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Cell Line:	HCT116 cells
Concentration:	10 and 20 nM
Incubation Time:	48 hours
Result:	Increased the percentage of the S phase from 31.43% to 42.75% (10 nM) and 49.38% (20 nM) respectively, and the percentage of the G2/M phase from 6.39% to 10.60% (10 nM) and 13.11% (20 nM), respectively.

In Vivo

ZLMT-12 (compound 35; 10 mg/kg; p.o.; daily, for 21 d) has antitumor efficacy and inhibits tumor growth, without causing liver harm in the HCT116 xenograft model^[1].

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

Animal Model:	Male BALB/cA-nu mice with HCT116 xenografts (18-25 g, 6-8 weeks of age) ^[1]
Dosage:	10 mg/kg
Administration:	Oral administration; daily, for 21 days
Result:	Inhibited tumor growth with GI (tumor volume growth inhibition)=47.66% and TGI (tumor weight growth inhibition)=62.39%. Exhibited no significant changes in behavior or body weight in mice. Had no obvious liver injury.

Animal Model:	Male Sprague-Dawley rats (240±20 g) ^[1]																												
Dosage:	2 mg/kg (i.v.) and 20 mg/kg (p.o.) (Pharmacokinetic Analysis)																												
Administration:	Intravenous injection and oral administration; once																												
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REFERENCES

[1]. Wu L, et, al. Development and structure-activity relationship of tacrine derivatives as highly potent CDK2/9 inhibitors for the treatment of cancer. Eur J Med Chem. 2022 Nov 15;242:114701.

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

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