

Product Data Sheet

Product Name: SC 79
Cat. No.: GC11645

Chemical Properties

Cas. No. 305834-79-1

Chemical Name ethyl 2-amino-6-chloro-4-(1-cyano-2-ethoxy-2-oxoethyl)-4H-chromene-3-carboxylate

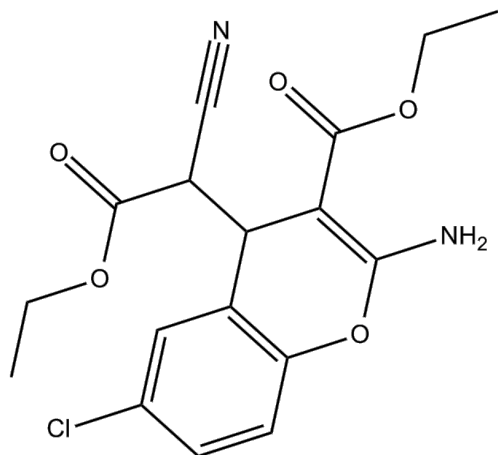
SMILES CCOC(C(C(C(C(OCC)=O)=C1N)C2=C(O1)C=CC(Cl)=C2)C#N)=O

Formula $C_{17}H_{17}ClN_2O_5$ M.Wt 364.78

Solubility $\geq 36.5\text{mg/mL}$ in DMSO Storage Store at -20°C , unstable in solution, ready to use.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines	ARPE-19 cells
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Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method	ARPE-19 cells were treated with applied concentration of SC 79 (0.1-10µg/mL) for 1h, p-Akt (Ser-473) and Akt1 expression was tested by Western blot.
Reaction Conditions	0.1, 1, 5, and 10µg/mL; 1h
Applications	Treatment with SC 79 induces Akt phosphorylation (p-Akt Ser-473) activation in a dose-dependent manner.
Animal experiment [2]:	
Animal models	C57BL/6 mice
Preparation Method	C57BL/6 mice were pretreated with SC 79 (10mg/kg; i.p.) for 0.5h, then administered D-galactosamine (400mg/kg) and LPS (60µg/kg). Liver caspase-3/7 activities were measured at 12h after D-Gal/LPS injection using a caspase-3/7 assay kit.
Dosage form	10mg/kg; i.p.
Applications	Pretreatment with SC 79 significantly reduces intrahepatic caspase-3/7 activity in mice.

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References:

- [1] Gong Y, Huang W, Li K, et al. SC 79 protects retinal pigment epithelium cells from UV radiation via activating Akt-Nrf2 signaling[J]. Oncotarget, 2016, 7(37): 60123.
- [2] Jing Z T, Liu W, Xue C R, et al. AKT activator SC 79 protects hepatocytes from TNF- α -mediated apoptosis and alleviates d-Gal/LPS-induced liver injury[J]. American Journal of Physiology-Gastrointestinal and Liver Physiology, 2019, 316(3): G387-G396.

Background

SC 79 is a specific, blood-brain barrier-permeable Akt agonist^[1]. SC 79 specifically binds to the PH domain of Akt, activates cytosolic Akt, while inhibiting Akt translocation to the plasma membrane^[2]. SC 79 has shown research utility in the fields of neuroprotection, ischemia-reperfusion injury, and apoptosis, and has demonstrated protective effects in animal models of stroke and liver injury^[3,4].

In vitro, SC 79 (4 μ g/mL) pretreatment of HepG2 cells for 30min, followed by co-treatment with TNF- α (0-16ng/mL) for 24h, significantly increased cell viability and reduced TUNEL-positive apoptotic cells^[5]. SC 79 (1-10 μ g/mL) treatment of ARPE-19 cells for 1h dose-dependently induced Akt phosphorylation (p-Akt Ser473) activation^[6].

In vivo, SC 79 (10mg/kg) pretreatment of C57BL/6 mice via intraperitoneal injection for 0.5h, followed by administration of D-galactosamine (400mg/kg) and lipopolysaccharide (LPS, 60 μ g/kg) to induce acute liver injury, significantly reduced hepatic caspase-3/7 activities in mice^[5]. SC 79 (10mg/kg) pretreatment of C57BL/6 mice via intraperitoneal injection for 0.5h, followed by administration of a lethal dose of anti-Fas Jo2 to induce acute liver failure, increased the 12h survival rate of mice from 0% to 35%, with no additional mortality observed through the end of the 2-month observation period^[7].

References:

- [1] Zhu J, Wu Y, Wu D, et al. SC 79, a novel Akt activator, protects dopaminergic neuronal cells from MPP+ and rotenone[J]. Molecular and cellular biochemistry, 2019, 461(1): 81-89.

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[2] Jo H, Mondal S, Tan D, et al. Small molecule-induced cytosolic activation of protein kinase Akt rescues ischemia-elicited neuronal death[J]. Proceedings of the National Academy of Sciences, 2012, 109(26): 10581-10586.

[3] Luan Q, Pan L, He D, et al. SC 79, the AKT activator protects cerebral ischemia in a rat model of ischemia/reperfusion injury[J]. Medical Science Monitor: International Medical Journal of Experimental and Clinical Research, 2018, 24: 5391.

[4] Xu Y, Gao Y W, Yang Y. SC 79 protects dopaminergic neurons from oxidative stress[J]. Oncotarget, 2017, 9(16): 12639.

[5] Jing Z T, Liu W, Xue C R, et al. AKT activator SC 79 protects hepatocytes from TNF- α -mediated apoptosis and alleviates d-Gal/LPS-induced liver injury[J]. American Journal of Physiology-Gastrointestinal and Liver Physiology, 2019, 316(3): G387-G396.

[6] Gong Y, Huang W, Li K, et al. SC 79 protects retinal pigment epithelium cells from UV radiation via activating Akt-Nrf2 signaling[J]. Oncotarget, 2016, 7(37): 60123.

[7] Liu W, Jing Z T, Wu S X, et al. A novel AKT activator, SC 79, prevents acute hepatic failure induced by Fas-mediated apoptosis of hepatocytes[J]. The American journal of pathology, 2018, 188(5): 1171-1182.

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