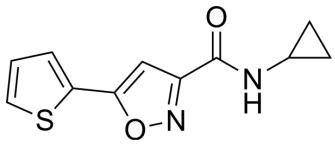
ISX-9 (GMP)

Cat. No.:	HY-12323G
CAS No.:	832115-62-5
Molecular Formula:	$C_{11}H_{10}N_2O_2S$
Molecular Weight:	234.27
Target:	Calcium Channel
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

ISX-9 (Isoxazole 9) is a potent inducer of adult neural stem cell differentiation. ISX-9 activates Ca^{2+} influx through both voltage-gated Ca^{2+} channels and NMDA receptors and increases neuroD expression. ISX-9 also induces cardiomyogenic differentiation of Notch-activated epicardium-derived cells (NECs)[1][2][3]. ***In Vitro:*** ISX-9 promotes neurogenesis in vivo, enhancing the proliferation and differentiation of hippocampal subgranular zone (SGZ) neuroblasts, and the dendritic arborization of adult-generated dentate gyrus neurons. At 2.5-20 μM, ISX-9 has been shown to dose-dependently trigger neurogenesis and block gliogenesis in adult rat hippocampal stem cells through a calcium-activated signaling pathway dependent on myocyte-enhancer factor 2-dependent gene expression[1].

Molecular exploration of ISX-9-induced regulation of neurogenesis (via FACS and microarray of SGZ stem and progenitor cells) suggested the involvement of the myocyte-enhancer family of proteins (Mef2)[1]. ***In Vivo:*** ISX-9 (20 mg/kg; for 12 days; mice) treatment improves hippocampal function. ISX-9 enhances spatial memory ability in the Morris water maze test. ISX-9 enhances hippocampal neurogenesis and memory in vivo, and its effects are reliant on Mef2[1].

In Vitro

ISX-9 (20 μM; for 7 days) can induce generated cardiac progenitor cells (CPCs) starting fromhuman-induced pluripotent stem cells (hiPSCs)[1].

ISX-9 (20 μM) induces CPCs to secrete extracellular vesicles (EV)[1].

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

Western Blot Analysis[1]

Cell Line:	hiPSCs, CPCs
Concentration:	20 μM
Incubation Time:	
Result:	Showed EV were enriched in EV-specific markers Tsg101, CD9, Hsp70, and flotillin-1.

In Vivo

CPC^{ISX-9}-derived EV reversed cardiac remodeling in infarcted mice[1].

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Animal Model:	NOD/SCID Mice[1]
Dosage:	20 μL (CPC^{ISX-9})

Administration:	CPC^{ISX-9} were injected into the myocardium along the border zone.
Result:	($EV\text{-}CPC^{ISX-9}$) Promoted CM proliferation and angiogenesis and reversed ventricular remodeling in mice post MI.

REFERENCES

[1]. Wanling Xuan, et al. miRNAs in Extracellular Vesicles from iPS-Derived Cardiac Progenitor Cells Effectively Reduce Fibrosis and Promote Angiogenesis in Infarcted Heart. Stem Cells Int. 2019 Nov 11;2019:3726392. doi: 10.1155/2019/3726392. eCollection 2019.

[2]. Maria Magdalena Barreca, et al. Mesenchymal and Induced Pluripotent Stem Cells-Derived Extracellular Vesicles: The New Frontier for Regenerative Medicine? Cells. 2020 May 8;9(5):1163.

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