

Product Name	:	NNMTi
Synonyms	:	5-Amino-1-methylquinolinium
Cat No.	:	M22751
CAS Number	:	42464-96-0
Molecular Formula	:	C10H11IN2?
Formula Weight	:	286.11
Chemical Name	:	
Description	:	NNMTi? is a substrate site-targeting, selective nicotinamide N-methyltransferase (NNMT) inhibitor (IC50 = 1.2 µM;?50 µM SAM, 100 µM NCA) that reduces 3T3-L1 lipogenesis (EC50 = 30µM) and adipocytes 1-methylnicotinamide level (EC50 = 2.3 µM) without affecting related methyltransferases & enzymes in the NAD+ salvage pathwayNNMTi treatment will rescue age-related deficits in muSC activity to promote superior regeneration post-injury in aging muscle.?24-month old mice were treated with saline (control), and low and high dose NNMTi (5 and 10 mg/kg) for 1-week post-injury, or control and high dose NNMTi for 3-weeks post-injury.?All mice underwent an acute muscle injury (barium chloride injection) locally to the tibialis anterior (TA) muscle, and received 5-ethynyl-2'-deoxyuridine systemically to analyze muSC activity.?In vivo contractile function measurements were conducted on the injured TA muscle and tissues collected for ex-vivo analyses, including myofiber cross-sectional area (CSA) measurements to assess muscle recovery.?Results revealed that muscle stem cell proliferation and subsequent fusion were elevated in NNMTi-treated mice, supporting nearly 2-fold greater CSA and shifts in fiber size distribution to greater proportions of larger sized myofibers and fewer smaller sized fibers in NNMTi-treated mice compared to controls.?Prolonged NNMTi treatment post-injury further augmented myofiber regeneration evinced by increasingly larger fiber CSA.?Importantly, improved muSC activity translated not only to larger myofibers after injury but also to greater contractile function, with the peak torque of the TA increased by 70% in NNMTi-treated mice compared to controls.?Similar results were recapitulated in vitro with C2C12 myoblasts, where NNMTi treatment promoted and enhanced myoblast differentiation with supporting changes in the cellular NAD+/NADH redox states.?
Pathway	:	Others
Target	:	Other Targets
Receptor	:	NNMT
Solubility	:	
SMILES	:	[F].C[n+]1cccc2c(N)cccc12
Storage	:	(-20℃)
Stability	:	≥ 2 years
Reference	:	

1. Harshini Neelakantan, et al. Small molecule nicotinamide N-methyltransferase inhibitor activates senescent muscle stem cells and improves regenerative capacity of aged skeletal muscle. Biochem Pharmacol. 2019 May;163:481-492.

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