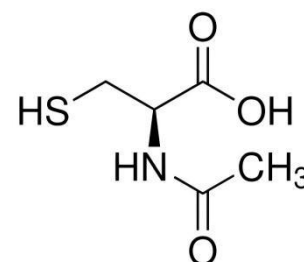


Acetylcysteine/NAC(抗氧化剂)

货号: RPM0017

◆ 产品信息

中文名称/Chinese Name:	Acetylcysteine/NAC(抗氧化剂)
别称/Synonyms:	Acetylcysteine,NAC, N-Acetyl-L-cysteine, N-acetylcysteine,N-Acetyl-Cysteine,N- 乙酰-半胱氨酸,乙酰半胱氨酸
CAS 号/CAS NO.:	616-91-1
化学式/Formula:	C ₅ H ₉ NO ₃ S
分子量/M.Wt:	163.19
外观/Appearance:	固体
保存条件/Storage:	Powder: -20°C, 3 年



◆ 溶解信息

溶解度/Solubility:	DMSO: 60 mg/mL (367.67 mM) 该化合物在溶液中不稳定, 请尽快使用。 Ethanol: 31 mg/mL (190 mM) H2O: 100 mg/ml (612.78 mM), 建议使用超声波和加热。
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溶液配制参考/Preparing Stock Solutions:

	1 mg	5 mg	10 mg
1 mM	6.1278 mL	30.6391 mL	61.2783 mL
5 mM	1.2256 mL	6.1278 mL	12.2557 mL
10 mM	0.6128 mL	3.0639 mL	6.1278 mL
50 mM	0.1226 mL	0.6128 mL	1.2256 mL

◆ 生物活性

产品描述/Description	Acetylcysteine (NAC) 是半胱氨酸的 N-乙酰衍生物, 是一种 ROS 抑制剂和粘液溶解剂, 具有抗氧化作用。可诱导细胞凋亡, 可用于减少粘液的厚度, 还具有抗流感病毒活性。在大多数类器官培养过程中需要添加。
靶点活性/Targets (IC ₅₀)	Apoptosis, TNF, Ferroptosis, Influenza Virus, Reactive Oxygen Species, ROS, Endogenous Metabolite
体外活性/In vitro	1.Acetylcysteine/NAC 还可防止 PC12 细胞和交感神经元死亡 ^[1] 。 2.Acetylcysteine/NAC 导致大鼠和人主动脉平滑肌细胞的活力呈剂量依赖性降低 ^[2] 。

	3.Acetylcysteine/NAC 激活 PC12 细胞中的 Ras 细胞外信号调节激酶 (ERK) 通路。Acetylcysteine/NAC 保护神经元细胞免于因营养支持撤消而引起的死亡。Acetylcysteine/NAC 增加血管组织中蛋白质结合储存的一氧化氮 (NO) 释放。Acetylcysteine/NAC 预处理 PC12 细胞会干扰 NGF 依赖的信号传导和神经突的生长, 提示 Acetylcysteine 会干扰 NGF 机制中的氧化还原敏感步骤^[3]。
体内活性/In vivo	1.方法: 为研究对小鼠凋亡性肝损伤的影响, 将 Acetylcysteine (150 mg/kg) 单次腹腔注射给 CD-1 小鼠, 30 min 后使用 GalN/LPS 诱导肝损伤。 结果: Acetylcysteine 预处理显著减轻了 GalN/LPS 诱导的肝细胞凋亡。Acetylcysteine 通过其强大的 ROS 清除和抗凋亡作用减轻 GalN/LPS 诱导的凋亡性肝损伤。^[5] 2.方法: 为检测体内活性, 将 Acetylcysteine (500 mg/kg) 口服给药给亨廷顿舞蹈症 (HD) 的 R6/1 转基因小鼠, 每天一次, 持续九周。 结果: 慢性 Acetylcysteine 给药延迟了 R6/1 小鼠运动缺陷的发生和发展, 同时对 R6/1 和野生型小鼠都具有抗抑郁样作用。^[6]
细胞实验/Cell Research	For survival experiments, washed cells are resuspended in RPM1 1640 medium and plated in 0.5 mL at a density of 8-10×10⁵ per well in 24 well plastic culture dishes coated with rat tail collagen. To feed, but to avoid loss of floating cells, fresh medium (0.2 mL) is added to the cultures on days 1, 5, and 10. For experiments involving “primed” PC12 cells, cultures are pretreated for 1-2 weeks with NGF in RPM1 1640 medium supplemented with 1% heat-inactivated horse serum. The cells are then washed and passaged into serum-free RPM1 1640 medium.^[1]
动物实验 /Animal Research	Rats are randomly allocated into five groups: sham group (n=5), control group with IIR (n=8) and three groups with IIR who are given N-acetylcysteine in different dosages: 150 mg/kg intraperitoneally 5 min before ischemia (n=8, group N-acetylcysteine 150), 300 mg/kg i.p 5 min before ischemia (n=7, group N-acetylcysteine 300), and 150 mg/kg i.p 5 min before ischemia plus 150 mg/kg 5 min before reperfusion (n=7, group N-acetylcysteine 150 + 150). After 4 h of reperfusion, the animals are euthanized by exsanguination from the abdominal aorta.^[4]

◆ 参考文献

- [1] Ferrari G, et al. N-acetylcysteine (D- and L-stereoisomers) prevents apoptotic death of neuronal cells. J Neurosci. 1995 Apr;15(4):2857-66.
- [2] Tsai JC, et al. Induction of apoptosis by pyrrolidinedithiocarbamate and N-acetylcysteine in vascular smooth muscle cells. J Biol Chem. 1996 Feb 16;271(7):3667-70.
- [3] Yan CY, et al. Prevention of PC12 cell death by N-acetylcysteine requires activation of the Ras pathway. J Neurosci. 1998 Jun 1;18(11):4042-9
- [4] Kalimeris K, et al. N-acetylcysteine ameliorates liver injury in a rat model of intestinal ischemia reperfusion. J Surg Res. 2016 Dec;206(2):263-272.

- [5] Xu B, Xu J, Cai N, et al. Roflumilast prevents ischemic stroke-induced neuronal damage by restricting GSK3 β -mediated oxidative stress and IRE1 α /TRAF2/JNK pathway[J]. Free Radical Biology and Medicine. 2020
- [6] Farr SA, et al. J Neurochem, 2003, 84(5), 1173-1183.

◆ 注意事项

1. 请在收到本产品后立即按照说明书中推荐的条件保存，使用前进行离心，使粉末充分沉降至管底。
2. 请根据实验目的及本产品的溶解性，选择相应的溶剂配制成高浓度母液后使用，最佳工作浓度请参考相关文献通过实验摸索优化，本说明书中的数据来源于公开文献，仅供参考。
3. 本产品仅供科研使用，不可用于诊断或治疗领域。
4. 为了您的安全和健康，请穿实验服并戴一次性手套操作。