

Small Molecules

AICAR

AMPK activator

Catalog # 72702
72704

10 mg
50 mg



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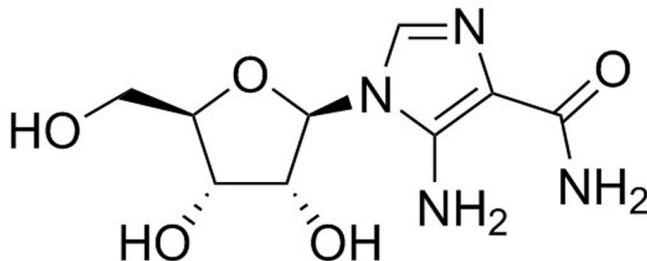
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Product Description

AICAR is an adenosine analog that selectively activates AMP-activated protein kinase (AMPK). AMPK functions as a metabolic sensor that regulates lipid and glucose metabolism to maintain cellular energy homeostasis and to protect against metabolic stress (Hardie and Carling). By activating AMPK, AICAR inhibits lipid synthesis and glucose uptake in hepatocytes and adipocytes, respectively (Corton et al.; Salt et al.).

Molecular Name:	AICAR
Alternative Names:	Acadesine; AICA Riboside; NSC 105823
CAS Number:	2627-69-2
Chemical Formula:	C ₉ H ₁₄ N ₄ O ₅
Molecular Weight:	258.2 g/mol
Purity:	≥ 98%
Chemical Name:	5-amino-1-β-D-ribofuranosyl-1H-imidazole-4-carboxamide
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com.
Solubility:	<ul style="list-style-type: none">· PBS (pH 7.2) ≤ 9 mM· DMSO ≤ 75 mM· Absolute ethanol ≤ 3 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 3.87 mL of fresh DMSO.

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

MAINTENANCE AND SELF-RENEWAL

· Induces upregulation of the pluripotency network genes (Klf4, Klf2, Nanog, Oct4, Myc, Sox2) and epigenetic-associated proteins (Dnmt3a, Mbd3) in mouse ES cells, and inhibits retinoic acid-induced differentiation (Adamo et al.; Shi et al).

DIFFERENTIATION

- Promotes differentiation and mineralization of MC3T3-E1 osteoblastic cells (Kanazawa et al.).
- Inhibits proliferation and promotes osteogenic differentiation, while inhibiting adipogenic differentiation, of human amnion-derived mesenchymal stem cells (MSCs) and rabbit bone marrow-derived MSCs (Wu et al.).
- Suppresses proliferation and induces astroglial differentiation in neural stem cells (NSCs) and in the immortalized NSC line C17.2 (C17.2-NSC; Zang et al. 2008, 2009).
- Decreased proliferation and Nanog expression in mouse embryonic stem (ES) cells, with increased erythroid differentiation (Chae et al.)

References

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- Wu W et al. (2011) AICAR, a small chemical molecule, primes osteogenic differentiation of adult mesenchymal stem cells. *Int J Artif Organs* 34(12): 1128–36.
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