

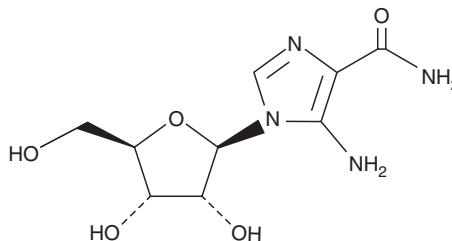
Product Information



AICAR

Item No. 10010241

CAS Registry No.: 2627-69-2
Formal Name: 5-amino-1-β-D-ribofuranosyl-1H-imidazole-4-carboxamide
Synonyms: AICA Riboside, Acadesine, NSC 105823
MF: C₉H₁₄N₄O₅
FW: 258.2
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid
UV/Vis.: λ_{max}: 268 nm



Laboratory Procedures

For long term storage, we suggest that AICAR be stored as supplied at -20°C. It should be stable for at least two years.

AICAR is supplied as a crystalline solid. A stock solution may be made by dissolving the AICAR in an organic solvent purged with an inert gas. AICAR is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of AICAR in these solvents is approximately 1, 20, and 10 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of AICAR can be prepared by directly dissolving the crystalline compound in aqueous buffers. The solubility of AICAR in PBS, pH 7.2, is approximately 2.5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

AMP-activated protein kinase (AMPK) functions as a metabolic sensor that regulates lipid and glucose metabolism to maintain cellular energy homeostasis and to protect against metabolic stress.¹ AICAR is a selective activator of AMPK in both hepatocytes and adipocytes.² At 0.5 mM it inhibits the synthesis of fatty acids and sterols and inactivates HMG-CoA reductase in rat hepatocytes.² AICAR (0.5 mM) inhibits insulin-stimulated glucose uptake to 62% of controls and reduces GLUT4 translocation 2.5-fold in 3T3-L1 adipocytes.³ It also blocks the expression of pro-inflammatory cytokines (TNF-α/IL-1β and IL-6), iNOS, COX-2, and MnSOD genes in glial cells and macrophages by inhibiting NFκB and C/EBP pathways.⁴

References

1. Hardie, D.G. and Carling, D. The AMP-activated protein kinase. Fuel gauge of the mammalian cell? *Eur. J. Biochem.* **246**, 259-273 (1997).
2. Corton, J.M., Gillespie, J.G., Hawley, S.A., *et al.* 5-aminoimidazole-4-carboxamide ribonucleoside. A specific method for activating AMP-activated protein kinase in intact cells? *Eur. J. Biochem.* **229**, 558-565 (1995).
3. Salt, I.P., Connell, J.M.C., and Gould, G.W. 5-aminoimidazole-4-carboxamide ribonucleoside (AICAR) inhibits insulin-stimulated glucose transport in 3T3-L1 adipocytes. *Diabetes* **49**, 1649-1656 (2000).
4. Ayasolla, K.R., Giri, S., Singh, A.K., *et al.* 5-aminoimidazole-4-carboxamide-1-beta-4-ribofuranoside (AICAR) attenuates the expression of LPS- and Aβ peptide-induced inflammatory mediators in astroglia. *Journal of Neuroinflammation* **2**, 1-21 (2005).

Related Products

Insulin (rat) EIA Kit - Item No. 589501 • Glucose Assay Kit - Item No. 10009582 • Triglyceride Assay Kit - Item No. 10010303 • Glycerol Assay Kit - Item No. 10010755

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WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent via email to your institution.

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