

Product Specification Sheet

Product Name: AICAR

Catalog Number: C2422

Technical information:

Chemical Formula: $C_9H_{14}N_4O_5$

CAS #: 2627-69-2

Molecular Weight: 258.23

Purity: > 98%

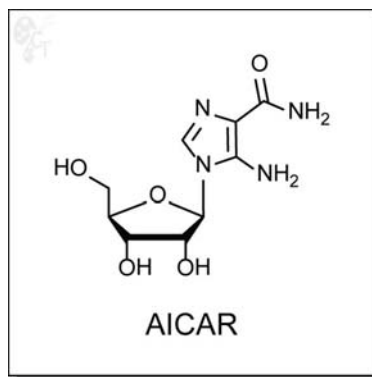
Appearance: White solid

Solubility: Soluble in DMSO up to 22 mM

Chemical Name: 5-amino-1-((2R,3R,4S,5R)-3,4-dihydroxy-5-(hydroxymethyl)tetrahydrofuran-2-yl)-1H-imidazole-4-carboxamide

Storage: Store solid powder at 4°C desiccated; Store DMSO solution at -20°C.

Shelf Life: In the unopened package, powder is stable for 1 year and DMSO solution is stable for 6 months under proper storage condition.



Handling:

- To make 10 mM stock solution, add 0.387mL of DMSO for each mg of AICAR
- For DMSO solution, briefly spin the vial at 500 rpm in a 50 mL conical tube to ensure maximum sample recovery.

Biological Activity: AICAR is a natural metabolic intermediate of the purine biosynthetic pathway. In its monophosphate form, AICAR is a potent AMPK agonist, which at low concentrations, does not affect AMP, ADP, or ATP levels. [1] AICAR's interacts directly with AMPK, inducing a conformational change that favors phosphorylation of the catalytic alpha subunit.

AMPK is also implicated in the modulation of enzymes such as glucokinase and glycogen phosphorylase. Direct binding by AICAR to phosphofructokinase and fructose-1,6-bisphosphatase have been reported. AICAR's interaction with HSP90 has also been studied and found to have antiproliferative effects in tumor cell lines such as PC-3, MCF-7, C6 glioma, U87MG, K-562, and CEM. [1, 2]

Reference:

1. Daignan-Fornier et al., 5-Aminoimidazole-4-carboxamide-1-beta-D-ribofuranosyl 5'-Monophosphate (AICAR), a Highly Conserved Purine Intermediate with Multiple Effects *Metabolites* 2012, 2, 292-302. Pubmed ID: ISSN: 2218-1989
2. Guo et al., The AMPK agonist AICAR inhibits the growth of EGFRvIII-expressing glioblastomas by inhibiting lipogenesis. *Proc. Natl. Acad. Sci.* 2009, 106(31), 12932-12937. Pubmed ID: 19625624

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