SAICAR

Cat. No.: HY-126585

CAS No.: 3031-95-6

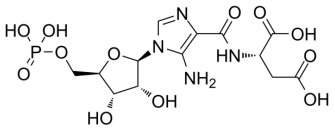
Molecular Formula: $C_{13}H_{19}N_4O_{12}P$

Molecular Weight: 454.28

Target: Endogenous Metabolite

Pathway: Metabolic Enzyme/Protease

Storage: 4°C, sealed storage, away from moisture and light
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 220 mg/mL (484.28 mM; Need ultrasonic)
H_2O : 100 mg/mL (220.13 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.2013 mL	11.0064 mL	22.0129 mL
	5 mM	0.4403 mL	2.2013 mL	4.4026 mL
	10 mM	0.2201 mL	1.1006 mL	2.2013 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 5.5 mg/mL (12.11 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 5.5 mg/mL (12.11 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 5.5 mg/mL (12.11 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

SAICAR is an intermediate of de novo purine nucleotide biosynthesis, activates pyruvate kinase isoform M2 (PKM2) in an isozyme-selective manner, with an EC_{50} of 0.3 mM. SAICAR stimulates PKM2 and promotes cancer cell survival in glucose-limited conditions[1][2].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

SAICAR accumulation induces nuclear localization of PKM2. PKM2-SAICAR phosphorylates and activates Erk1/2, which in

turn sensitizes PKM2 for SAICAR binding through phosphorylation. Additionally, PKM2-SAICAR was necessary to induce sustained Erk1/2 activation and mitogen-induced cell proliferation. SAICAR-PKM2 interaction is necessary and sufficient to induce H3 T11 and Erk1/2 phosphorylation[2].

Upon glucose starvation, cellular SAICAR concentration increases in an oscillatory manner and stimulates PKM2 activity in cancer cells. The SAICAR-PKM2 interaction also promotes cancer cell survival in glucose-limited conditions. In glucose-limited conditions, cells with higher SAICAR concentrations (adsl-kd cells or cells overexpressing PAICS) survive better while paics-kd cells died earlier than control-kd cells. SAICAR promotes cancer cell survival in glucose-limited conditions[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Drug Test Anal. 2022 Nov 7.

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REFERENCES

[1]. Keller KE, et al. SAICAR induces protein kinase activity of PKM2 that is necessary for sustained proliferative signaling of cancer cells. Mol Cell. 2014 Mar 6;53(5):700-9.

[2]. Keller KE, et al. SAICAR stimulates pyruvate kinase isoform M2 and promotes cancer cell survival in glucose-limited conditions. Science. 2012 Nov 23;338(6110):1069-72.

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