

Small Molecules

A769662

AMPK activator

Catalog # 72922
72924

10 mg
50 mg



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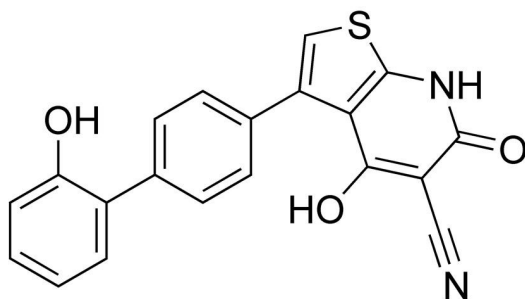
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Product Description

A769662 is a cell-permeable, direct activator of AMP-activated protein kinase (AMPK) with an EC₅₀ of 116 nM (Goransson et al.). A 4.1-fold stimulation of AMPK is observed, via an allosteric mechanism, which potentially inhibits dephosphorylation on Thr172 (Goransson et al.; Sanders et al.). A769662 specifically activates β 1 subunit-containing AMPK heterotrimers, and its effects are independent of kinases upstream of AMPK. Activation of AMPK can inhibit the mTORC1 signaling pathway (Huang et al.). A769662 is also an inhibitor of Na(+)-K(+)-ATPase (Benziane et al.).

Molecular Name:	A769662
Alternative Names:	Not applicable
CAS Number:	844499-71-4
Chemical Formula:	C ₂₀ H ₁₂ N ₂ O ₃ S
Molecular Weight:	360.4 g/mol
Purity:	≥ 98%
Chemical Name:	6,7-dihydro-4-hydroxy-3-(2'-hydroxy[1,1'-biphenyl]-4-yl)-6-oxo-thieno[2,3-b]pyridine-5-carbonitrile
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 55 mM · Absolute ethanol ≤ 1 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 2.77 mL of 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.

Compound has low solubility in aqueous media. 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

- Inhibits proliferation of mesenchymal stem cells (de Meester et al.).

REPROGRAMMING

- Inhibits reprogramming of mouse fibroblasts to induced pluripotent stem cells (Vazquez-Martin et al.).

CANCER RESEARCH

- Delays tumor onset in PTEN-deficient mice (Huang et al.).

METABOLISM

- Inhibits fatty acid synthesis in primary rat hepatocytes and lowers blood glucose in Sprague Dawley rats (Cool et al.).

References

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- Cool B et al. (2006) Identification and characterization of a small molecule AMPK activator that treats key components of type 2 diabetes and the metabolic syndrome. *Cell Metab* 3(6): 403–16.
- Goransson O et al. (2007) Mechanism of Action of A-769662, a Valuable Tool for Activation of AMP-activated Protein Kinase. *J Biol Chem* 282(45): 32549–60.
- Huang X et al. (2008) Important role of the LKB1-AMPK pathway in suppressing tumorigenesis in PTEN-deficient mice. *Biochem J* 412(2): 211–21.
- De Meester C et al. (2014) Role of AMP-activated protein kinase in regulating hypoxic survival and proliferation of mesenchymal stem cells. *Cardiovasc Res* 101(1): 20–9.
- Sanders MJ et al. (2007) Defining the mechanism of activation of AMP-activated protein kinase by the small molecule A-769662, a member of the thienopyridone family. *J Biol Chem* 282(45): 32539–48.
- Vazquez-Martin A et al. (2012) Activation of AMP-activated protein kinase (AMPK) provides a metabolic barrier to reprogramming somatic cells into stem cells. *Cell Cycle* 11(5): 974–89.

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