

Certificate of Analysis

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Product Name: Metformin hydrochloride

Catalog No.: 2864

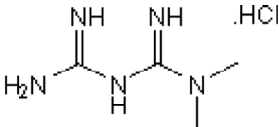
Batch No.: 4

CAS Number: 1115-70-4

EC Number: 214-230-6

IUPAC Name: *N,N*-Dimethylimidodicarbonimidic diamide hydrochloride

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula:	C ₄ H ₁₁ N ₅ .HCl
Batch Molecular Weight:	165.62
Physical Appearance:	White solid
Solubility:	water to 100 mM DMSO to 20 mM with gentle warming
Storage:	Store at RT
Batch Molecular Structure:	

2. ANALYTICAL DATA

¹H NMR:	Consistent with structure			
Mass Spectrum:	Consistent with structure			
Microanalysis:	Carbon Hydrogen Nitrogen			
	Theoretical	29.01	7.3	42.28
	Found	29.06	7.37	42.42

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

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4

CAS Number: 1115-70-4

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Description:

Metformin hydrochloride is an antidiabetic agent; lowers plasma glucose levels and improves insulin sensitivity. Inhibits hepatic gluconeogenesis via activation of the LKB1/AMPK pathway. Displays antiproliferative effects in cancer cell lines via inhibition of mitochondrial complex I (MRC-1). Activates the aPKC-CBP pathway in neural precursors to promote neurogenesis. Activates autophagy. Identified by chemoinformatics as targeting human host proteins that interact with SARS-CoV-2. Metformin hydrochloride prevents brain atrophy, and slows the pace of aging across diverse tissues in animal studies.

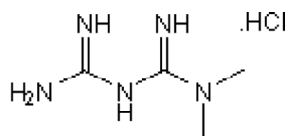
Physical and Chemical Properties:

Batch Molecular Formula: C₄H₁₁N₅.HCl

Batch Molecular Weight: 165.62

Physical Appearance: White solid

Batch Molecular Structure:



References:

Yang et al (2024) Metformin decelerates aging clock in male monkeys. *Cell* **187** 1. PMID: 39270656.

Gordon et al (2020) A SARS-CoV-2-human protein-protein interaction map reveals drug targets and potential drug-repurposing. *Nature* **583**. PMID: 32353859.

Galluzzi et al (2017) Pharmacological modulation of autophagy: therapeutic potential and persisting obstacles. *Nat.Rev.Drug.Discov.* PMID: 28529316 .

Storage: Store at RT

Solubility & Usage Info:

water to 100 mM

DMSO to 20 mM with gentle warming

Stability and Solubility Advice:

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. *Unless contradicted by product-specific protocols or instructions, our standard recommendations apply:

SOLIDS: Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

SOLUTIONS: We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

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