

Certificate of Analysis

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Product Name: Metformin hydrochloride

Catalog No.: 2864

Batch No.: 2

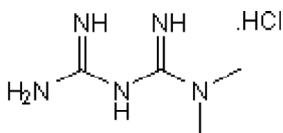
CAS Number: 1115-70-4

EC Number: 214-230-6

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

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: C₄H₁₁N₅.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

Melting Point: Between 224 - 225°C
¹H NMR: Consistent with structure
Mass Spectrum: Consistent with structure

Microanalysis:

	Carbon	Hydrogen	Nitrogen
Theoretical	29	7.3	42.29
Found	29.08	7.26	41.97

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

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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.

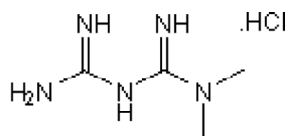
Physical and Chemical Properties:

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Batch Molecular Weight: 165.62

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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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