Wortmannin from *Penicillium funiculosum*

Catalog Number W1628
Storage Temperature 2-8 °C

CAS RN: 19545-26-7
Synonym: KY 12420

Molecular formula: C_{23}H_{24}O_{8}
Molecular weight: 428.43 (anhydrous)

Melting point: 240 °C

**Product Description**

Wortmannin is a highly cell permeable antifungal antibiotic isolated from *Penicillium funiculosum*. It has no antibacterial properties and is specifically active against fungi.²

It is a specific and potent inhibitor of myosin light chain kinase³ and a potent inhibitor of neutrophil activation by inhibiting F-Met-Leu-Phe (FMLP)-stimulated superoxide anion production without affecting intracellular calcium mobilization.⁴ It inhibits FMLP-stimulated phospholipase D activation without direct inhibition of the enzyme.⁵ It affects various signal transduction cascades by inhibiting phosphatidylinositol-3-kinases (PI3Ks) and blocking the recovery of calcium and potassium channels. This specific activity is important in studies of various receptor-mediated mechanisms.⁶⁻⁸

Phosphatidylinositol-3-kinase participates in the signal transduction pathway responsible for histamine secretion following stimulation of high affinity immunoglobulin E receptor (FceRI). Wortmannin blocks these responses through direct interaction with the catalytic subunits (110 kDa) of PI3-kinase.⁹

Wortmannin inhibited the activity of partially purified PI3-kinase from calf thymus at concentrations as low as 1.0 nM and with IC₅₀ values of 3.0 nM. Inhibition was irreversible. It inhibited both FceRI-mediated histamine secretion and leukotriene release up to 80% with IC₅₀ values of 2.0 and 3.0 nM, respectively.⁹

Additional activities: immunosuppressive activity¹⁰, strong anti-inflammatory activity¹¹, suppression of cellular responses such as respiratory burst and exocytosis in neutrophils,⁵ and catecholamine release in adrenal chromaffin cells¹². Aggregation and serotonin release in platelets were reported using a final concentration of 1 µM of wortmannin in 0.01% DMSO.¹³,¹⁴

**Precautions and Disclaimer**

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

**Preparation instructions**

Sigma routinely tests the solubility at 10 mg/ml in ethyl acetate yielding a clear very faint yellow solution. Also soluble in:
- Methanol (5 mg/mL)
- DMSO (50 mg/mL)

**Storage/Stability**

Store the product desiccated and protected from light at 2-8 °C. Under these conditions the product is stable for 3 years.

It is unstable in aqueous solutions of pH 3-8.¹

A solution of 50 mg/ml in DMSO is stable for at least 2 months if stored at −20 °C.

**References:**