

U0126 (MEK1/2 Inhibitor)

✓ 5 mg

Orders ■ 877-616-CELL (2355)
orders@cellsignaling.com

Support ■ 877-678-TECH (8324)
info@cellsignaling.com

Web ■ www.cellsignaling.com

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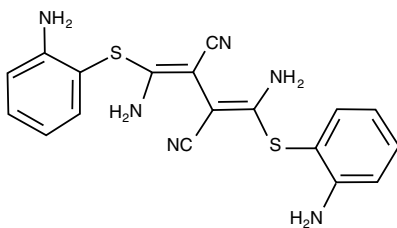
This product is for *in vitro* research use only and is not intended for use in humans or animals.
This product is not intended for use as a therapeutic or in diagnostic procedures.

Description: U0126 (1,4-diamino-2,3-dicyano-1,4-bis[2-aminophenylthio] butadiene) has been shown to be a highly selective inhibitor of MEK 1 and MEK 2. When compared with PD98059 #9900, U0126 shows a significantly higher affinity for MEK1. U0126 and PD98059 bind to this enzyme in a mutually exclusive fashion suggesting that they share a common binding site (5). U0126 is able to inhibit both MEK1 and MEK2 while PD98059 inhibits MEK1 more potently than MEK2.

Background: MEK1 and MEK2, also called MAPK or Erk kinases, are dual-specificity protein kinases that function in a mitogen activated protein kinase cascade controlling cell growth and differentiation (1-3). Activation of MEK1 and MEK2 occurs through phosphorylation of two serine residues at positions 217 and 221 (in the activation loop of subdomain VIII) by Raf-like molecules. MEK1/2 is activated by a wide variety of growth factors and cytokines and also by membrane depolarization and calcium influx (1-4). Constitutively active forms of MEK1/2 are sufficient for the transformation of NIH/3T3 cells or the differentiation of PC12 cells (4). MEK activates p44 and p42 MAP kinase by phosphorylating both threonine and tyrosine residues at sites located within the activation loop of kinase subdomain VIII.

Specificity/Sensitivity: U0126 (MEK1/2 Inhibitor) does not inhibit protein kinases including c-Abl, Raf, MEKK, Erk, JNK, MKK3, MKK4/SEK1, MKK6, CDK2 or CDK4.

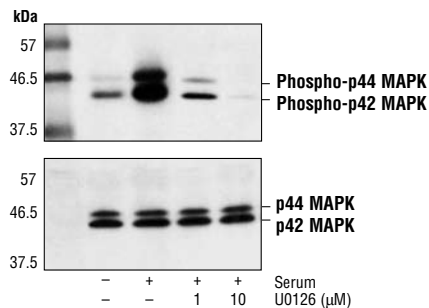
Molecular Formula: 1,4-diamino-2,3-dicyano-1,4-bis[2-aminophenylthio] butadiene (C₁₈H₁₆N₆S₂).



Molecular Weight: 380.50

Purity: >99%

Directions for Use: U0126 (MEK1/2 Inhibitor) is supplied as a lyophilized white powder. For 10 mM stock, resuspend 5 mg of the inhibitor in 1.31 ml DMSO. Methanol can be substituted for DMSO. Aliquot and freeze at -20°C or below to avoid multiple freeze/thaw cycles which can degrade the inhibitor. For experiments with cultured cells, we recommend pretreating the cells with U0126 at 10 μM for 30 minutes to two hours prior to stimulation. (It may be necessary to use higher concentrations.)



Western blot analysis of extracts from NIH/3T3 cells, using Phospho-p44/42 MAP Kinase (Thr202/Tyr204) Antibody #9101 or control p44/42 MAP Kinase Antibody #9102. NIH/3T3 cells were pretreated with U0126 (MEK1/2 Inhibitor) for 2 hours then treated with 20% serum for 30 minutes.

Selected Application References:

Chow, S. et al. (2001) Measurement of MAP kinase activation by flow cytometry using phospho-specific antibodies to MEK and ERK: potential for pharmacodynamic monitoring of signal transduction inhibitors. *Cytometry* 46, 72–78.

Knopov, M.S.h. (1992) [An outstanding Soviet pharmacologist (on the centenary of the birth of S. V. Anichkov)] *Voen Med Zh.*, 71–72.

Vogt, A. et al. (2001) Spatial analysis of key signaling proteins by high-content solid-phase cytometry in Hep3B cells treated with an inhibitor of Cdc25 dual-specificity phosphatases. *J. Biol. Chem.* 276, 20544–20550.

Akassoglou, K. et al. (2002) Fibrin inhibits peripheral nerve remyelination by regulating Schwann cell differentiation. *Neuron* 33, 861–875.

Re, F. and Strominger, J.L. (2001) Toll-like receptor 2 (TLR2) and TLR4 differentially activate human dendritic cells. *J. Biol. Chem.* 276, 37692–37699.

Levi, E. et al. (2000) Distinct effects of CD30 and Fas signaling in cutaneous anaplastic lymphomas: a possible mechanism for disease progression. *J. Invest. Dermatol.* 115, 1034–1040.

Background References:

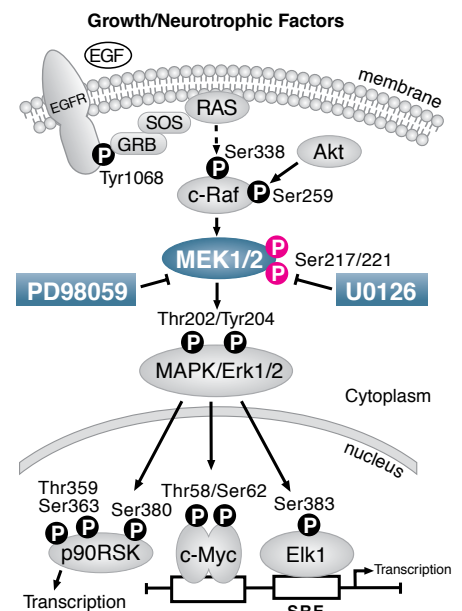
- (1) Crews, C.M. et al. (1992) *Science* 258, 478–480.
- (2) Alessi, D.R. et al. (1994) *EMBO J.* 13, 1610–1619.
- (3) Rosen, L.B. et al. (1994) *Neuron* 12, 1207–1221.
- (4) Cowley, S. et al. (1994) *Cell* 77, 841–852.
- (5) Favata, M.F. et al. (1998) *J. Biol. Chem.* 273, 18623–18632.

Entrez-Gene ID # 5604, 5605
Swiss-Prot Acc. # Q02750, P36507

Storage: Store tightly sealed at or below -20°C in the dark.

For application specific protocols please see the web page for this product at www.cellsignaling.com.

Please visit www.cellsignaling.com for a complete listing of recommended companion products.



Applications Key: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide

Species Cross-Reactivity Key: H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebrafish B—bovine

Dg—dog Pg—pig Sc—S. cerevisiae All—all species expected Species enclosed in parentheses are predicted to react based on 100% sequence homology.

Material Safety Data Sheet (MSDS) for U0126 (MEK 1/2 Inhibitor)

I. Identification:

Product name: U0126 (MEK 1/2 Inhibitor)

Product Catalog: 9903

CAS number: None

Manufacturer Supplier: Cell Signaling Technology
3 Trask Lane
Danvers, MA 01923 USA
978-867-2300 TEL
978-867-2400 FAX
978-578-6737 EMERGENCY TEL

II. Composition/Information on Ingredients:

Chemical Name: 1,4-diamino-2,3-dicyano-1,4-bis(aminophenylthio)butadiene
Synonym(s): U0126
Formula: C₁₈H₁₆N₆S₂
Formula Weight: 380.5

III. Hazard Identification:

EMERGENCY OVERVIEW:

May be an irritant.

CAUTION:

May cause irritation to eyes, skin, mucous membranes.

Wear suitable personal protective equipment.

HMIS Rating: Health: 1
Flammability: 0
Reactivity: 0

IV. First Aid Measures:

Inhalation: If inhaled, remove to fresh air. If breathing is difficult, get medical attention.

Ingestion: If swallowed, wash out mouth with water provided person is conscious. Get medical attention.

Skin exposure: In case of contact, immediately wash skin with soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.

Eye exposure: In case of contact with eyes, immediately flush eyes water for at least 15 minutes. Get medical attention.

V. Fire Fighting Measures:

Flash Point: data not available

Autoignition Temperature: data not available

Explosion: data not available

Fire extinguishing media: water spray, dry chemical, foam, or carbon dioxide.

Firefighting: wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

VI. Accidental Release Measures: Wear appropriate personal protective equipment as indicated in Section VIII. Sweep up material and avoid raising dust. Transfer to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

VII. Handling And Storage: Store in tightly closed container at -20°C. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

VIII. Exposure Controls/Personal:

Ventilation System: a system of local and/or general exhaust is recommended.

Skin Protection: wear compatible chemical resistant gloves and protective clothing.

Eye protection: wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

IX. Physical And Chemical Properties:

Appearance: white
Physical State: solid
Odor: none
Boiling Point: data not available
Melting Point: data not available
Freezing point: data not available
Volatile Organic Compounds: none
Solubility: soluble in DMSO

X. Stability and Reactivity:

Stability: stable under normal conditions.

Conditions to avoid: acids, bases, light, and heat.

Hazardous Decomposition: carbon monoxide and carbon dioxide fumes may occur.

XI. Toxicological Information:

Acute Effects: none known. May be irritating to eyes, skin, mucous membranes.

Chronic Effects: To the best of our knowledge, the chemical, physical, and toxicological properties of this solution have not been thoroughly investigated.

XII. Ecological Information:

Data not available.

XIII. Disposal Considerations: Dispose of in accordance with federal, state, local environmental regulations.

XIV. Transport Information:

DOT

Proper Shipping Name: none

Hazard Class: This substance is considered non-hazardous for transport.

UN/NA: none

Packing group: none

IATA

Proper Shipping Name: none

Non-Hazardous for air transport: This substance is considered non-hazardous for air transport.

XV. Regulatory Information: EU Regulations/Classifications/Labeling Information: Not available for this chemical substance.

US Regulatory Information:

SARA Listed: No

Canada (WHMIS): DSL No, NDSL No.

XVI. Other Information:

This compound is sold only for research use by personnel familiar with chemicals and who are well trained in good laboratory habits, such as avoiding spills, keeping hands clean at all times and not rubbing eyes with hands while working in the laboratory.

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide for experienced personnel. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product. The burden of safe use of this material rests entirely with the user.