

## Certificate of Analysis

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**Product Name:** Plumbagin

CAS Number: 481-42-5

IUPAC Name: 5-Hydroxy-2-methyl-1,4-naphthalenedione

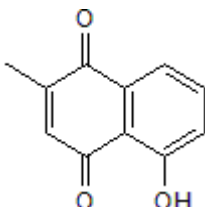
**Catalog No.:** 4761

EC Number: 207-569-6

**Batch No.:** 1

### 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** C<sub>11</sub>H<sub>8</sub>O<sub>3</sub>  
**Batch Molecular Weight:** 188.18  
**Physical Appearance:** Orange solid  
**Solubility:** DMSO to 100 mM  
 ethanol to 50 mM  
**Storage:** Store at -20°C  
**Batch Molecular Structure:**



### 2. ANALYTICAL DATA

**HPLC:** Shows 100% purity  
**<sup>1</sup>H NMR:** Consistent with structure  
**Mass Spectrum:** Consistent with structure

**Microanalysis:**

	Carbon	Hydrogen	Nitrogen
Theoretical	70.21	4.28	
Found	69.91	4.22	

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

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**Description:**

Anticancer agent. Induces G<sub>2</sub>/M cell cycle arrest and apoptosis in A549 cells through JNK-dependent p53 Ser15 phosphorylation; inhibits A549 and MDA-MD-231 tumour xenograft growth in nude mice. Promotes autophagic cell death in MDA-MB-231 and MCF-7 cells and inhibits Akt/mTOR signaling. Induces intracellular ROS generation in a PI 5-kinase-dependent manner. Also inhibits p300-mediated acetylation of p53.

**Physical and Chemical Properties:**

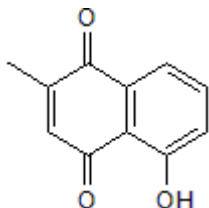
Batch Molecular Formula: C<sub>11</sub>H<sub>8</sub>O<sub>3</sub>

Batch Molecular Weight: 188.18

Physical Appearance: Orange solid

**Minimum Purity:** >98%

**Batch Molecular Structure:**



**References:**

**Hsu et al** (2006) Plumbagin (5-hydroxy-2-methyl-1,4-naphthoquinone) induces apoptosis and cell cycle arrest in A549 cells through p53 accumulation via c-Jun NH<sub>2</sub>-terminal kinase mediated phosphorylation at serine 15 in vitro and in vivo. *J.Pharmacol.Exp.Ther.* **318** 484. PMID: 16632641.

**Kuo et al** (2006) Plumbagin induces G<sub>2</sub>-M arrest and autophagy by inhibiting the AKT/mammalian target of rapamycin pathway in breast cancer cells. *Mol.Cancer Ther.* **5** 3209. PMID: 17172425.

**Ravindra et al** (2009) Inhibition of lysine acetyltransferase KAT3B/p300 activity by a naturally occurring hydroxynaphthoquinone, plumbagin. *J.Biol.Chem.* **284** 24453. PMID: 19570987.

**Lee et al** (2012) The natural anticancer agent plumbagin induces potent cytotoxicity in MCF-7 human breast cancer cells by inhibiting a PI-5 kinase for ROS generation. *PLoS One.* **7** e45023. PMID: 23028742.

**Storage:** Store at -20°C

**Solubility & Usage Info:**

DMSO to 100 mM

ethanol to 50 mM

**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. Our standard recommendations are:

**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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