

# Certificate of Analysis

**Product Name:** Sanguinarine chloride

**Catalog No.:** 2302

**Batch No.:** 1

CAS Number: 5578-73-4

IUPAC Name: 13-Methyl-[1,3]-benzodioxolo[5,6-c]-1,3-dioxolo[4,5-*l*]phenanthridinium chloride

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:**  $C_{20}H_{14}ClNO_4 \cdot 2\frac{1}{2}H_2O$

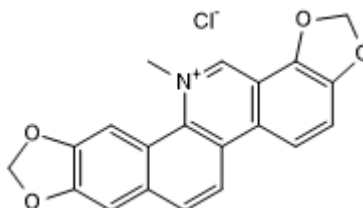
**Batch Molecular Weight:** 412.82

**Physical Appearance:** Orange solid

**Solubility:** DMSO to 10 mM  
ethanol to 5 mM

**Storage:** Store at +4°C

**Batch Molecular Structure:**



## 2. ANALYTICAL DATA

**Melting Point:** Between 273 - 274°C

**HPLC:** Shows 97.8% purity

**<sup>1</sup>H NMR:** Consistent with structure

**Mass Spectrum:** Consistent with structure

**Microanalysis:**

Carbon Hydrogen Nitrogen

Theoretical 58.19 4.64 3.39

Found 58.22 4.59 3.35

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

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**Description:**

Inhibitor of protein phosphatase 2C (PP2C), selective over PP1, PP2A and PP2B *in vitro*. Also inhibits mitogen-activated protein kinase phosphatase-1 (MKP-1) (IC<sub>50</sub> = 10 μM). Plant alkaloid that exhibits anti-inflammatory and antioxidant activity. Blocks cell cycle in the G<sub>1</sub> phase; inhibits cell growth in human prostate carcinoma cells.

**Physical and Chemical Properties:**

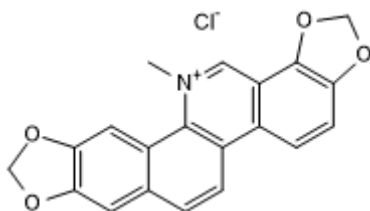
Batch Molecular Formula: C<sub>20</sub>H<sub>14</sub>ClNO<sub>4</sub>·2½H<sub>2</sub>O

Batch Molecular Weight: 412.82

Physical Appearance: Orange solid

**Minimum Purity:** >97%

**Batch Molecular Structure:**



**Storage:** Store at +4°C

**Solubility & Usage Info:**

DMSO to 10 mM

ethanol to 5 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.

**References:**

**Adhami et al** (2004) Sanguinarine causes cell cycle blockade and apoptosis of human prostate carcinoma cells via modulation of cyclin kinase inhibitor-cyclin-cyclin-dependent kinase machinery. *Mol.Cell Ther.* **3** 934.

**Vogt et al** (2005) The benzo[c]phenanthridine alkaloid, sanguinarine, is a selective, cell-active inhibitor of mitogen-activated protein kinase phosphatase-1. *J.Biol.Chem.* **280** 19078. PMID: 15753082.

**Aburai et al** (2010) Sanguinarine as a potent and specific inhibitor of protein phosphatase 2C *in vitro* and induces apoptosis via phosphorylation of p38 in HL60 cells. *Biosci.Biotechnol.Biochem.* **74** 548. PMID: 20208361.

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