

# Certificate of Analysis

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**Product Name:** Naloxone benzoylhydrazone

**Catalog No.:** 1419

**Batch No.:** 1

**CAS Number:** 119630-94-3

**IUPAC Name:** [(5 $\alpha$ )-4,5-Epoxy-3,14-dihydroxy-17-(2-propenyl)morphinan-6-ylidene] benzoic acid hydrazide

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** C<sub>26</sub>H<sub>27</sub>N<sub>3</sub>O<sub>4</sub>· $\frac{1}{4}$ H<sub>2</sub>O

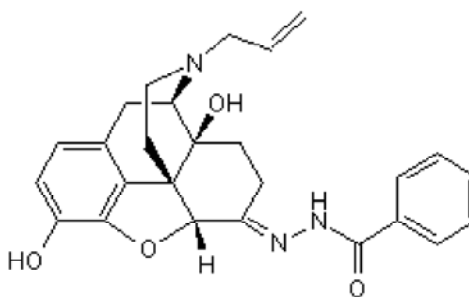
**Batch Molecular Weight:** 450.02

**Physical Appearance:** White solid

**Solubility:** DMSO to 50 mM

**Storage:** Desiccate at +4°C

**Batch Molecular Structure:**



## 2. ANALYTICAL DATA

**TLC:** R<sub>f</sub> = 0.5 (Dichloromethane:Methanol [9:1])

**Melting Point:** Greater than 200°C

**HPLC:** Shows >99.5% purity

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

**Mass Spectrum:** Consistent with structure

**Microanalysis:**

Carbon Hydrogen Nitrogen

Theoretical 69.39 6.16 9.34

Found 69.16 6.18 9.31

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

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**Description:**

Mixed opioid receptor agonist/antagonist. Acts as a potent and full agonist at  $\kappa$ , a partial agonist at  $\mu$  and  $\delta$  opioid receptors (pEC<sub>50</sub> values are 9.45, 8.74 and 8.61 in a cAMP assay, 9.70, 8.59 and 8.49 in a [<sup>35</sup>S]GTP $\gamma$ S binding assay respectively). Fails to exert agonist effects at NOP receptors and antagonizes agonist-induced NOP activation. Stimulates  $\kappa$ -,  $\mu$ - and  $\delta$ -mediated analgesia and blocks NOP-induced supraspinal nociception.

**Physical and Chemical Properties:**

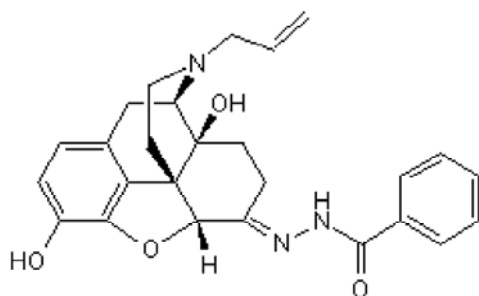
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Batch Molecular Weight: 450.02

Physical Appearance: White solid

**Minimum Purity:**  $\geq 99\%$

**Batch Molecular Structure:**



**Storage:** Desiccate at +4°C

**Solubility & Usage Info:**

DMSO 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.

**References:**

**Connor and Kitchen** (2006) Has the sun set on  $\kappa_3$ -opioid receptors? Br.J.Pharmacol **147** 349. PMID: 16402044.

**Olianas et al** (2006) Agonist activity of naloxone benzoylhydrazone at recombinant and native opioid receptors. Br.J.Pharmacol. **147** 360. PMID: 16402046.

**Gistrak et al** (1989) Pharmacological actions of a novel mixed opiate agonist/antagonist: naloxone benzoylhydrazone J.Pharmacol.Exp.Ther. **251** 469. PMID: 2553921.

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