bio-techne
TOCRIS

Print Date: Mar 15th 2024

# Certificate of Analysis

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**Product Name:** **Verapamil hydrochloride** **Catalog No.: 0654** **Batch No.: 10**

CAS Number: 152-11-4 EC Number: 205-800-5

IUPAC Name: α-[3-[[2-(3,4-Dimethoxyphenyl)ethyl]methylamino]propyl]-3,4-dimethoxy-α-(1-methylethyl)benzeneacetonitrile hydrochloride

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** $C_{27}H_{38}N_2O_4$.HCl.

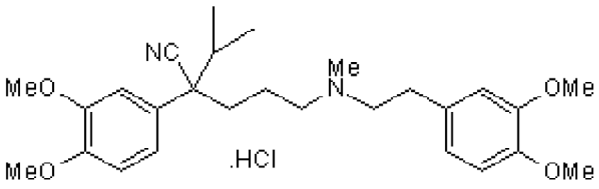
**Batch Molecular Weight:** 491.07

**Physical Appearance:** White solid

**Solubility:** water to 50 mM
DMSO to 50 mM

**Storage:** Store at RT

**Batch Molecular Structure:**




## 2. ANALYTICAL DATA

**HPLC:** Shows 99.9% purity

**$^1$H NMR:** Consistent with structure

**Mass Spectrum:** Consistent with structure

**Microanalysis:**

| | Carbon | Hydrogen | Nitrogen |
|---|---|---|---|
| Theoretical | 66.04 | 8.01 | 5.7 |
| Found | 65.83 | 8.1 | 5.78 |



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**Description:**

Verapamil hydrochloride is an L-type calcium channel blocker, anti-arrythmic, vasodilator and adrenergic antagonist. Induces autophagy by modulating cellular metabolism. Verapamil is a P-glycoprotein inhibitor and can reverse resistance to glucocorticoids and cancer treatments. Verapamil has been identified as targeting human host proteins that interact with SARS-CoV-2.

**Physical and Chemical Properties:**

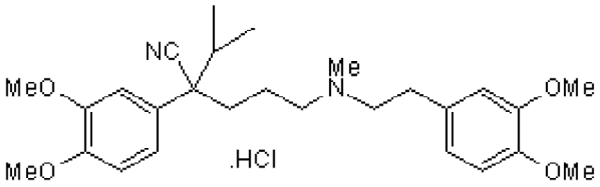
Batch Molecular Formula: $C_{27}H_{38}N_2O_4$.HCl.

Batch Molecular Weight: 491.07

Physical Appearance: White solid

**Minimum Purity:** ≥99%

**Batch Molecular Structure:**




**Storage:** Store at RT

**Solubility & Usage Info:**

water to 50 mM
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. *Unless contradicted by product-specific protocols or instructions, our standard recommendations apply:

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:**

**Taha** *et al* (2021) P-glycoprotein inhibition with verapamil overcomes mometasone resistance in chronic sinusitis with nasal polyps. Rhinology ***59*** 205. PMID: 33459729.

**Gordon** *et al* (2020) A SARS-CoV-2 protein interaction map reveals targets for drug repurposing. Nature ***583***. PMID: 32353859.

**Kania** *et al* (2017) Verapamil treatment induces cytoprotective autophagy by modulating cellular metabolism. FEBS J. ***284*** 1370. PMID: 28342290.