

# Diltiazem (hydrochloride)

Catalog No: tcsc2339



## Available Sizes

Size: 1g

Size: 5g



## Specifications

**CAS No:**

33286-22-5

**Formula:**

$C_{22}H_{27}ClN_2O_4S$

**Pathway:**

Membrane Transporter/Ion Channel

**Target:**

Calcium Channel

**Purity / Grade:**

>98%

**Solubility:**

H<sub>2</sub>O : 33.33 mg/mL (73.91 mM; Need ultrasonic)

**Alternative Names:**

CRD-401

**Observed Molecular Weight:**

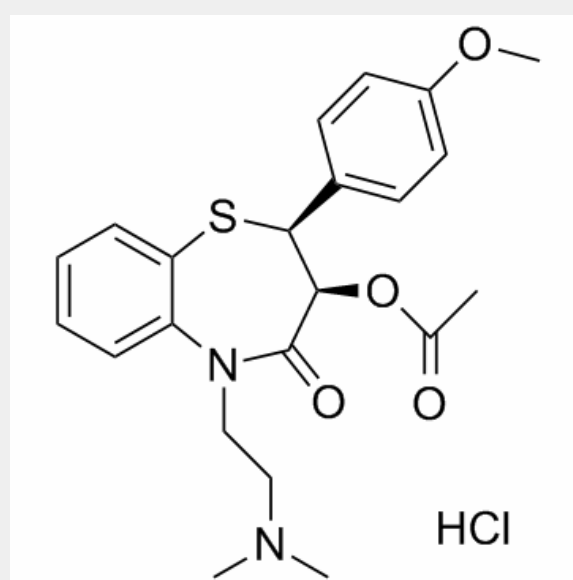
450.98

## Product Description

Diltiazem hydrochloride is a **Ca<sup>2+</sup>** influx inhibitor (slow channel blocker or calcium antagonist).

**In Vitro:** Benzothiazepine  $\text{Ca}^{2+}$  antagonist diltiazem hydrochloride interacts with transmembrane segments IIS6 and IVS6 in the  $\alpha 1$  subunit of L-type  $\text{Ca}^{2+}$  channels<sup>[1]</sup>. Diltiazem causes a dose-dependent inhibition of contractions as well as  $\text{Ca}^{2+}$  influx stimulated by alpha adrenoceptor activation and high- $\text{K}^{+}$  depolarization. Diltiazem is roughly equally potent in inhibiting contractions induced by high- $\text{K}^{+}$  and a low concentration of norepinephrine (NE)<sup>[2]</sup>. Diltiazem also inhibits the Na-dependent Ca-efflux from heart mitochondria. Both the (+)-optical isomers of the cis- and trans-forms of diltiazem inhibit Na-Ca exchange activity with comparable potency ( $\text{IC}_{50}$  of 10-20  $\mu\text{M}$ )<sup>[3]</sup>.

**In Vivo:** Diltiazem produces a noncompetitive inhibition of  $\text{Ca}^{2+}$ -induced contractions of depolarized rabbit aorta. Furthermore, there is a lack of parallelism between the smooth muscle effects of removal of  $[\text{Ca}^{2+}]_{\text{ex}}$  and of addition of diltiazem<sup>[2]</sup>. Diltiazem improves the cardiac microcirculation and function in an experimental model of hyperthyroidism in rats. The treatment of hyperthyroid rats with losartan diltiazem ( $4.7 \pm 0.7\%$ ; P [4]. In conscious spontaneously hypertensive rats (SHR), diltiazem dose-dependently decreases the blood pressure and increases the heart rate after intravenous administration (0.03--1 mg/kg). Oral administration of diltiazem (100 mg/kg) also reduces the blood pressure of SHR<sup>[5]</sup>.



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