



Product Information

(±)-Verapamil hydrochloride

Product Number **V 4629**

Store at Room Temperature

Product Description

Molecular Formula: $C_{27}H_{38}N_2O_4 \cdot HCl$

Molecular Weight: 491.1

CAS Number: 152-11-4

Melting point: 141 to 144 °C.¹; decomposes 138.5 to 140.5 °C²

Extinction coefficient: $E^{mM} = 16.1$ (232 nm in ethanol)

Extinction coefficient: $E^{mM} = 6.1$ (280 nm in ethanol)

Verapamil is a calcium channel (L-type) modulator, adrenoceptor antagonist, anti-arrhythmic, cardiac depressant, and coronary vasodilator.³ It is also a calcium channel-blocker. It acts by inhibiting the slow channel entry of calcium into the cell. It acts by plugging up the channels and limiting the entry of calcium into both smooth muscle cells of arteriolar walls and the cardiac muscle cells at higher doses.⁴ A study of the metabolism of verapamil in rats and dogs at dose levels similar to those employed during human therapy has been published.⁵

Verapamil has been detected in plasma by GC.⁶ Pharmacokinetics have been reviewed.⁷

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water or methanol (50 mg/ml).

It is soluble in the following solvents (mg/ml): water 83, ethanol (200 proof) 26, propylene glycol 93, ethanol (190 proof) >100, methanol >100, 2-propanol 4.6, ethyl acetate 1.0, DMF >100, methylene chloride >100.² A 5% solution in water has a pH of 4.5 to 6.5.³ Verapamil hydrochloride (21 °C) is sparingly soluble in chloroform.

The precipitation of verapamil hydrochloride in sodium bicarbonate injection was attributed to the high pH of the solution. Verapamil will precipitate at a pH greater than 7.⁸

Storage/Stability

Solutions can be stored at 4 °C for several weeks.

Solutions are sterilized by autoclaving.⁸

References

1. Clarke's Isolation and Identification of Drugs, 2nd ed., p.1060.
2. The Merck Index, 11th ed., Entry# 9851.
3. Scharff, O., and Foder, B., Effect of trifluoperazine, compound 48/80, TMB-8 and verapamil on the rate of calmodulin binding to erythrocyte Ca^{2+} -ATPase. *Biochim. Biophys. Acta.*, **772(1)**, 29 (1984).
4. Upson, D.W., *Handbook of Clinical Veterinary Pharmacology*, p. 422, (1985).
5. McIlhenny, H. M., Metabolism of [¹⁴C] verapamil. *J. Medicinal Chem.*, **14(12)**, 1178-1184 (1971).
6. McAllister, R.G., et al., GLC assay of verapamil in plasma: identification of fluorescent metabolites after oral drug administration. *J. Pharm. Sci.*, **68(5)**, 574-577 (1979).
7. Hamann, S.R., et al., Clinical pharmacokinetics of verapamil. *Clin. Pharmacokinet.*, **9(1)**, 26-41 (1984).
8. Martindale The Extra Pharmacopoeia, 29th ed., p. 89

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