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# ProductInformation

## Trifluoroperazine dihydrochloride

Product Number **T8516**
Storage Temperature -0 °C

### Product Description

Molecular Formula: $C_{21}H_{24}F_3N_3S \cdot 2HCl$
Molecular Weight: 480.4
CAS Number: 440-17-5
Melting Point: 242-243 °C[1]
$pK_a$: 3.9, 8.1 [1]
Synonyms: 10-[3-(4-methyl-1-piperazinyl)-propyl]-2-(trifluoromethyl)-10H-phenothiazine dihydrochloride; 2-trifluoromethyl-10-[3'-(1-methyl-4-piperazinyl)propyl]phenothiazine dihydrochloride[1]

Trifluoperazine is a phenothiazine derivative with a piperazine side chain that is used in cell signaling and neuroscience research. It has α-adrenergic blocking and antimuscarinic activities comparable to those of chlorpromazine.[2] Trifluoperazine can inhibit the high-conductance pore that occurs during mitochondrial permeability transition, and thus can counter various mechanisms of cell injury and apoptosis.[3,4] A review of annexin-formed channels discusses the potential effects of trifluoperazine on their function.[5]

Trifluoperazine (3 µM) has been shown to inhibit photopolarization in zygotes of the algae *Fucus serratus*.[6] In a study of cold-induced apoptosis in cultured rat liver endothelial cells, trifluoperazine has been demonstrated to inhibit ultracondensation, loss of mitochondrial membrane potential, and loss of viability during the rewarming of the cells.[7] Trifluoperazine has been used to block phospholipase $A_2$ activity in hypothermically treated rat hepatocytes, and thus to inhibit arachidonic acid incorporation into phospholipids.[8] Trifluoperazine is a calmodulin antagonist, and the binding of trifluoperazine to porcine brain calmodulin and to rabbit skeletal muscle troponin C has been studied using an HPLC binding assay.[9]

### Precautions and Disclaimer

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

### Preparation Instructions

This product is soluble in water (50 mg/ml), with heat as needed, yielding a clear, colorless to yellow-tan solution. It is also soluble in DMSO and in ethanol (5 mg/ml).

### Storage/Stability

Solutions of this product may be stored for several weeks at 4 °C.

### References

1. The Merck Index, 12th ed., Entry# 9811.
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3. Lemasters, J. J., et al., Confocal microscopy of the mitochondrial permeability transition in necrotic and apoptotic cell death. Biochem. Soc. Symp., **66**, 205-222 (1999).
4. Lemasters, J. J., et al., The mitochondrial permeability transition in cell death: a common mechanism in necrosis, apoptosis and autophagy. Biochim. Biophys. Acta, **1366(1-2)**, 177-196 (1998).
5. Kourie, J. I., and Wood, H. B., Biophysical and molecular properties of annexin-formed channels. Prog. Biophys. Mol. Biol., **73(2-4)**, 91-134 (2000).
6. Love, J., et al., $Ca^{2+}$ and Calmodulin Dynamics during Photopolarization in *Fucus serratus* Zygotes. Plant Physiol., **115(1)**, 249-261 (1997).
7. Kerkweg, U., et al., Cold-induced apoptosis of rat liver endothelial cells: contribution of mitochondrial alterations. Transplantation, **76(3)**, 501-508 (2003).
8. Kim, J. S., and Southard, J. H., Phospholipid metabolism of hypothermically stored rat hepatocytes. Hepatology, **30(5)**, 1232-1240 (1999).
9. Massom, L., et al., Trifluoperazine binding to porcine brain calmodulin and skeletal muscle troponin C. Biochemistry, **29(3)**, 671-681 (1990).

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