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ProductInformation

Clotrimazole

Product Number **C 6019**
Store at Room Temperature

Product Description
Molecular Formula: $C_{22}H_{17}N_2Cl$
Molecular Weight: 344.8
CAS Number: 23593-75-1
Melting Point: 147-149 °C
λ_{max}: 261 nm
Synonyms: 1-(*o*-chloro-α,α-diphenylbenzyl)imidazole, 1-(o-chlorotrityl)imidazole, diphenyl-(2-chlorophenyl)-1imidazolylmethane

Clotrimazole is an imidazole derivative and antifungal compound which has similar antimicrobial action and activity to ketoconazole.[2] Clotrimazole is known to block the Ca^{2+}-activated K^+ channels of intermediate conductance (IK channels) in erythrocytes.[3] The inhibition of the canine isoform of the IK1 channel, as expressed in HEK293 or CHO cells, by clotrimazole has been investigated.[4]

Clotrimazole has been utilized *in vitro* on cultured human prostate cancer cells to counteract the proliferative effects of 1-ethyl-2-benzimidazolinone and riluzole.[5] The upregulation of the *ERG11* gene, which codes for the azole target enzyme lanosterol demethylase, in *Candida* species upon treatment with clotrimazole and other antibiotics has been studied.[6]

A concentration of 3 µg/ml of clotrimazole is generally effective for inhibiting many fungal species that are sensitive to clotrimazole.[2] An investigation of various yeast strains and their susceptibility to clotrimazole and other antibiotics has been published.[7] The effectiveness of clotrimazole against various *Mycobacteria* strains, with cytochrome P450 mono-oxygenases as specific molecular targets, has been studied.[8] The susceptibility of several strains of *Plasmodium falciparum* to clotrimazole has been reported.[9]

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

Preparation Instructions
This product is soluble in chloroform (50 mg/ml), yielding a clear, colorless solution. It has been reported to be soluble in alcohol, ethyl acetate, acetone, and dimethylformamide.[1,2] The solubility of this product in DMSO has been reported to be 25 mM.[9]

References
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3. Jensen, B. S., et al., The Ca^{2+}-activated K^+ channel of intermediate conductance: a molecular target for novel treatments? Curr. Drug Targets, **2(4)**, 401-422 (2001).
4. Wulf, A., and Schwab, A., Regulation of a calcium-sensitive K^+ channel (cIK1) by protein kinase C. J. Membr. Biol., **187(1)**, 71-79 (2002).
5. Parihar, A. S., et al., Effects of intermediate-conductance Ca^{2+}-activated K^+ channel modulators on human prostate cancer cell proliferation. Eur. J. Pharmacol., **471(3)**, 157-164 (2003).
6. Henry, K. W., et al., Upregulation of ERG genes in *Candida* species by azoles and other sterol biosynthesis inhibitors. Antimicrob. Agents Chemother., **44(10)**, 2693-2700 (2000).
7. Carrillo-Munoz, A. J., et al., Ciclopiroxolamine: *in vitro* antifungal activity against clinical yeast isolates. Int. J. Antimicrob. Agents, **20(5)**, 375-379 (2002).

8. McLean, K. J., et al., Azole antifungals are potent inhibitors of cytochrome P450 mono-oxygenases and bacterial growth in *Mycobacteria* and *Streptomycetes*. Microbiology, **148(Pt 10)**, 2937-2949 (2002).

9. Tiffert, T., et al., Potent antimalarial activity of clotrimazole in *in vitro* cultures of *Plasmodium falciparum*. Proc. Natl. Acad. Sci. USA, **97(1)**, 331-336 (2000).

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