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PRODUCT INFORMATION



Chlorhexidine (hydrochloride)

Item No. 17343

CAS Registry No.: 3697-42-5

Formal Name: N¹,N¹⁴-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediiimidamide, dihydrochloride

Synonym: CHX

MF: C₂₂H₃₀Cl₂N₁₀ • 2HCl

FW: 578.4

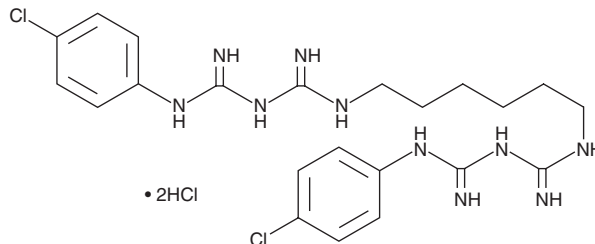
Purity: ≥80%

UV/Vis.: λ_{max}: 258 nm

Supplied as: A crystalline solid

Storage: -20°C

Stability: ≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Chlorhexidine (CHX) (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the CHX in the solvent of choice, which should be purged with an inert gas. CHX is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of CHX in these solvents is approximately 10 mg/ml.

CHX is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, CHX should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. CHX has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Chlorhexidine is a bis(biguanide) antimicrobial disinfectant and antiseptic agent.¹ It inhibits growth of clinical methicillin-resistant *S. aureus* (MRSA) isolates (MIC₉₀ = 4 µg/ml).² It is also active against canine isolates of MRSA, methicillin-susceptible *S. aureus* (MSSA), methicillin-resistant *S. pseudintermedius* (MRSP), and methicillin-susceptible *S. pseudintermedius* (MSSP; MIC_{90s} = 4, 2, 2, and 1 mg/L, respectively).³ Chlorhexidine inhibits growth of *E. faecium* strains (MICs = 1.2-19.6 µg/ml) and *C. albicans* (MIC = 5.15 µg/ml).^{4,5} It generates cations that bind to and destabilize the bacterial cell wall to induce death.⁶ Chlorhexidine also completely inhibits matrix metalloproteinase-2 (MMP-2) and MMP-9 when used at concentrations of 0.0001 and 0.002%, respectively, in a gelatin degradation assay.⁷ Formulations containing chlorhexidine have been used in antiseptic wound dressings, mouthwash, and toothpaste.

References

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2. McDanel, J.S., Murphy, C.R., Diekema, D.J., et al. *Antimicrob. Agents Chemother.* **57**(1), 552-558 (2013).
3. Clark, S.M., Loeffler, A., and Bond, R. J. *Antimicrob. Chemother.* **70**(7), 2048-2052 (2015).
4. Bhardwaj, P., Hans, A., Ruikar, K., et al. *Antimicrob. Agents Chemother.* **62**(1), e01235-17 (2017).
5. Scheibler, E., da Silva, R.M., Leite, C.E., et al. *Arch. Oral Biol.* **89**, 70-76 (2018).
6. Barrett-Bee, K., Newbould, L., and Edwards, S. *FEMS Microbiol. Lett.* **119**(1-2), 249-253 (1994).
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WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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