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ProductInformation

Chlorhexidine diacetate salt hydrate

Product Number **C 6143**
Store at Room Temperature

Product Description

Molecular Formula: $C_{22}H_{30}Cl_2N_{10} \bullet (C_2H_4O_2)_2$
Molecular Weight: 625.6
CAS Number: 56-95-1
Melting Point: 154-155 °C[1,2]
Critical Micellar Concentration (CMC):
0.01% (w/v, 25 °C)[3,4]

Chlorhexidine diacetate and the related compound chlorhexidine digluconate are used as antiseptics and disinfectants.[1] Chlorhexidine diacetate has been used in research on gingivitis and plaque control.[5,6]

This product can be used for prevention of microbial growth in chromatography resins such as cross-linked dextran at a concentration of 0.002%. However, it is not recommended for use with beaded agarose.[7] Information on the compatibility of chlorhexidine with different solutions has been published.[3]

It has been reported variously that chlorhexidine diacetate does[3,4] or does not [8] form micelles in solution. Dicationic drugs similar to chlorhexidine diacetate (demecarium bromide and dequalinium bromide) do form micelles at millimolar concentrations.[8] Information on the mechanism of resistance of *Bacillus subtilis* spores to chlorhexidine has been published.[9]

Precautions and Disclaimer

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

Preparation Instructions

This compound is soluble in water (19 mg/ml). Aqueous solutions decompose when heated above 70 °C. It is soluble in water at room temperature, whereas the dihydrochloride and other inorganic salts are relatively insoluble.[3]

Chlorhexidine diacetate is soluble in alcohol, glycerol, propylene glycol, polyethylene glycols.[1] According to the manufacturer, 1 part chlorhexidine is soluble in 15 parts of 96% ethanol.

Storage/Stability

Dilute aqueous solutions of chlorhexidine (<10 mg/ml) may be sterilized by autoclaving at 115 °C for 30 minutes or at 121-123 °C for 15 minutes. Autoclaving of solutions greater than 10 mg/ml can result in the formation of insoluble residues. For autoclaved solutions, the choice of container material is important, best results being achieved with neutral glass or polypropylene. If soda glass is used with chlorhexidine solutions, the resultant pH may be above that which is considered optimal for stability (pH 5 - 7) due to leaching of alkaline materials from the bottle.

If sterile solutions are required at such high concentrations, filtration through a 0.22 µm membrane filter is recommended. However, the first 10 ml of filtrate should be discarded because some of the chlorhexidine diacetate may be adsorbed. Fibrous and procelain filters are unsuitable.

Prolonged exposure to high temperature or light is to be avoided because this can adversely affect the stability of chlorhexidine solutions. All dilute solutions to be stored should be heat-treated (sterilized or pasteurized) to eliminate the possibility of microbial contamination.

Aqueous solutions of chlorhexidine are most stable within the pH range 5 - 8. Above pH 8.0, chlorhexidine base is precipitated; below pH 5.0, the compound is not stable. Hydrolysis yields p-chloroaniline. The amount is insignificant at room temperature, but is increased by heating above 100 °C, especially at alkaline pH.[3]

References

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5. Foulkes, D.M., J. Periodont. Res.,**8**, Suppl. 12, 55-60 (1973).
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IRB/NSB 11/03