5. Heard BE. Low concentrations of formaldehyde in bronchial asthma. *BMJ* 1986; **293:** 821.
6. Galland MC, *et al.* Risques thérapeutiques de l'utilisation des solutions de formol dans le traitement chirurgical des kystes hydatiques du foie. *Therapie* 1980; **35:** 443–6.

Treatment of Adverse Effects

Contaminated skin should be washed with soap and water. After ingestion water, milk, charcoal, and/or demulcents should be given; emesis should be avoided. Assisted ventilation may be required and shock should be alleviated appropriately. Convulsions should be controlled with diazepam and pain with morphine. Acidosis, resulting from metabolism of formaldehyde to formic acid, may require intravenous sodium bicarbonate or sodium lactate. The use of haemodialysis has been suggested.

Uses and Administration

Formaldehyde solution is a bactericidal disinfectant also effective against fungi and many viruses. It is slowly effective against bacterial spores but its sporicidal effect is greatly increased by increase in temperature.

Formaldehyde solution is usually used diluted and it is important to note that the strength of preparations is given in terms of the content of formaldehyde solution and not in terms of the final concentration of formaldehyde (see under Strength of Solutions, above).

Formaldehyde solution is used in the disinfection of blankets and bedding and in the disinfection of the membranes in dialysis equipment. It is important to ensure that there are no traces of formaldehyde on any equipment before it is used. Formaldehyde solution is also used with succinic dialdehyde for instrument disinfection.

When applied to the unbroken skin, formaldehyde solution hardens the epidermis, renders it tough and whitish, and produces a local anaesthetic effect. Formaldehyde solution 3% v/v has been used for the treatment of warts on the palms of the hands and soles of the feet. It is used similarly as a water-miscible gel containing formaldehyde 0.75% w/w. Sweating of the feet may be treated by the application of formaldehyde solution in glycerol or alcohol but such applications are liable to produce sensitisation reactions and other treatments are regarded as more effective (see Hyperhidrosis, p.1580).

After surgical removal of hydatid cysts, diluted formaldehyde solution has been used for irrigating the cavities to destroy scolices but other larvicides are preferred (see Echinococcosis, p.136). It is generally too irritant for use on mucous membranes but it has been used in mouthwashes and pastes as an antiseptic and hardening agent for the gums. In dentistry it has been used in endodontic treatment.

Formaldehyde solution in concentrations of up to 10% v/v in saline is used as a preservative for pathological specimens. It is not suitable for preserving urine for subsequent examination. Formaldehyde solution is used for the inactivation of viruses in vaccine production.

Formaldehyde gas has little penetrating power and readily polymerises and condenses on surfaces and its effectiveness depends on it dissolving in a film of moisture before acting on micro-organisms; in practice a relative humidity of 80 to 90% is necessary. Formaldehyde gas is used for the disinfection of rooms and cabinets. The gas may be produced from 500 mL of undiluted formaldehyde solution by boiling with 1 litre of water or by addition of potassium permanganate or by heating a formaldehyde-containing solid such as paraformaldehyde (p.1655). Formaldehyde gas is used with low-temperature steam for the sterilisation of heat-sensitive items.

Other compounds which are thought to act by releasing formaldehyde include noxytiolin (p.1654) and methenamine (p.298).

Haemorrhagic cystitis. Formaldehyde has been used for local therapy of haemorrhagic cystitis (p.2178), although there has been debate about the most appropriate regimen. The Fair regimen[1] for the intravesical use of formaldehyde solution in haemorrhagic cystitis involves passive irrigation of the bladder with 500 to 1000 mL of formaldehyde solution 1% v/v for a total of 10 minutes, the bladder subsequently being emptied and washed out with 1 litre of distilled water. Stronger concentrations of formaldehyde solution and other methods can be used if bleeding does not stop.[2] In a review of 118 patients treated with solutions of formaldehyde for intractable haematuria, the authors felt that this was probably the most effective treatment, but also probably the most dangerous.[3] More concentrated instillations, containing formaldehyde solution 5 to 10% seem to be generally viewed as unnecessary, and associated with an increased risk of complications which precludes their use.[4-7]

1. Fair WR. Formalin in the treatment of massive bladder hemorrhage: techniques, results, and complications. *Urology* 1974; **3:** 573–6.
2. Anonymous. Haemorrhagic cystitis after radiotherapy. *Lancet* 1987; **i:** 304–6.
3. Godec CJ, Gleich P. Intractable hematuria and formalin. *J Urol (Baltimore)* 1983; **130:** 688–91.
4. Bullock N, Whitaker RH. Massive bladder haemorrhage. *BMJ* 1985; **291:** 1522–3.
5. Donahue LA, Frank IN. Intravesical formalin for haemorrhagic cystitis: analysis of therapy. *J Urol (Baltimore)* 1989; **141:** 809–12.
6. Murray JA, *et al.* Massive bladder haemorrhage. *BMJ* 1986; **292:** 57.
7. Smith PJB, *et al.* Massive bladder haemorrhage. *BMJ* 1986; **292:** 412.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Formol; ***Ger.:*** Lysoform; ***UK:*** Veracur; ***USA:*** Formadon; Formalaz; Formalyde; Lazerformaldehyde.

Multi-ingredient: ***Arg.:*** Cistimax Ungueal; Parodium; ***Austral.:*** Formo-Cresol Mitis; ***Canad.:*** British Army Foot Powder†; Duoplant; ***Fr.:*** Aniospray 41; Bacterianos D†; Chlorispray†; Ephydrol; Incidine†; Parodium; Veybirol-Tyrothyricine†; ***Ger.:*** Aseptisol†; Buraton 10 F; Desoform†; Incidin perfekt; Incidin Spezial; Lysoformin; Melsept†; Melsitt; Minutil†; Prontocid N†; Sekusept forte S; Sekusept forte†; Sporcid; Ultrasol-F; ***Indon.:*** Skintex; ***Ital.:*** Melsept; ***Rus.:*** Parodium (Пародиум); ***Spain:*** Tifell†; Viberol Tirotricina.

Glucoprotamine

Glucoprotamina. Reaction product of L-glutamic acid and cocopropylene-1,3-diamine.

Profile

Glucoprotamine is used as a disinfectant for surfaces and medical equipment.

◊ References.

1. Disch K. Glucoprotamine—a new antimicrobial substance. *Zentralbl Hyg Umweltmed* 1994; **195:** 357–65.
2. Meyer B, Kluin C. Efficacy of glucoprotamin containing disinfectants against different species of atypical mycobacteria. *J Hosp Infect* 1999; **42:** 151–4.
3. Widmer AE, Frei R. Antimicrobial activity of glucoprotamin: a clinical study of a new disinfectant for instruments. *Infect Control Hosp Epidemiol* 2003; **24:** 762–4.

Preparations

Proprietary Preparations (details are given in Part 3)
Ger.: Incidin Plus; Sekusept Plus.

Multi-ingredient: ***Ger.:*** Incidin; Incidin extra N; Sekumatic FDR†.

Glutaral *(USAN, rINN)*

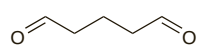
Adehyd glutarowy; Glutaraldehid; Glutaraldehyde; Glutaralum; Glutaric Dialdehyde; Pentanedial. Pentane-1,5-dial.

Глутарал

$C_5H_8O_2$ = 100.1.

CAS — 111-30-8.

ATC — D08AX09.



Pharmacopoeias. Solutions of glutaral are included in *Br.*, *Chin.*, and *US*. A solution is also in *USNF*.

BP 2008: (Strong Glutaraldehyde Solution). It contains 47 to 53% w/w of glutaral. Store at a temperature not exceeding 15°.

USP 31 (Glutaral Concentrate). It contains 50 to 52% w/w of glutaral and has a pH between 3.7 and 4.5. Store at a temperature not exceeding 40° in airtight containers. Protect from light.

USNF 26 (Glutaral Disinfectant Solution). It has a pH between 2.7 and 3.7. Store at a temperature not exceeding 40° in airtight containers. Protect from light.

Adverse Effects

As for Formaldehyde Solution, p.1644.

Effects on the gastrointestinal tract. Insufficient rinsing of a glutaral 2% solution from flexible endoscopes after disinfection appears to be responsible for outbreaks of glutaral-induced colitis in patients undergoing colonoscopy and sigmoidoscopy.[1-4] Symptoms may occur within minutes or up to 48 hours after endoscopy and are usually abdominal pain, mucous diarrhoea, and rectal bleeding. Fever, nausea, vomiting and leucocytosis have also been reported. A case of glutaral-induced colitis has also been attributed to inadequate flushing and drying of the endoscope channels.[2]

1. Durante L, *et al.* Investigation of an outbreak of bloody diarrhea: association with endoscopic cleaning solution and demonstration of lesions in an animal model. *Am J Med* 1992; **92:** 476–80.
2. West AB, *et al.* Glutaraldehyde colitis following endoscopy: clinical and pathological features and investigation of an outbreak. *Gastroenterology* 1995; **108:** 1250–5.
3. Fukunaga K, Khatibi A. Glutaraldehyde colitis: a complication of screening flexible sigmoidoscopy in the primary care setting. *Ann Intern Med* 2000; **133:** 315.
4. Stein BL, *et al.* Glutaraldehyde-induced colitis. *Can J Surg* 2001; **44:** 113–16.

Occupational exposure. Reviews[1,2] of the occupational hazards of glutaral have noted that several studies showed adverse effects, including nausea, headache, airway obstruction, asthma, rhinitis, eye irritation, and dermatitis, occurring among medical personnel exposed to glutaral, generally at concentrations below the recommended limits. Skin reactions were due to hypersensitivity or a direct irritant effect. It was concluded that, when using glutaral, workers should take suitable precautions to protect the skin and eyes and should avoid inhaling the vapour. Appropriate procedures should also be followed for disposal and clean-up of spills.

The risk of occupational exposure to glutaral vapour may be higher in warm climates.[3]

There has also been a report of accidental ocular contact with glutaral due to leakage of glutaral solution retained in an anaesthesia mask; moderate chemical conjunctivitis ensued.[4]

1. Burge PS. Occupational risks of glutaraldehyde. *BMJ* 1989; **299:** 342.
2. Ballantyne B, Jordan SL. Toxicological, medical and industrial hygiene aspects of glutaraldehyde with particular reference to its biocidal use in cold sterilization procedures. *J Appl Toxicol* 2001; **21:** 131–51.
3. Mwaniki DL, Guthua SW. Occupational exposure to glutaraldehyde in tropical climates. *Lancet* 1992; **340:** 1476–7.
4. Murray WJ, Ruddy MP. Toxic eye injury during induction of anaesthesia. *South Med J* 1985; **78:** 1012–13.

Uses and Administration

Glutaral is a bactericidal disinfectant that is rapidly effective against Gram-positive and Gram-negative bacteria. It is also effective against *Mycobacterium tuberculosis*, some fungi, and viruses, including hepatitis B virus and HIV, and is slowly effective against bacterial spores. Aqueous solutions show optimum activity between pH 7.5 and 8.5; such solutions are chemically stable for about 14 days. Solutions at lower pH values are more stable.

A 2% aqueous solution buffered to a pH of about 8 (activated glutaral; alkaline glutaral) may be used for the sterilisation of endoscopic and dental instruments, rubber or plastic equipment, and for other equipment which cannot be sterilised by heat. Glutaral is non-corrosive towards most materials. Complete immersion in the solution for 10 to 20 minutes is sufficient for rapid disinfection of thoroughly cleansed instruments but exposure for up to 10 hours may be necessary for sterilisation. For further details, see Disinfection of Endoscopes, p.1623, and Disinfection in Hepatitis and HIV Infection, p.1623.

A 10% solution is applied twice daily for the treatment of warts (p.1584); a 5% solution and a 10% gel have also been used. Glutaral should not be used for facial or anogenital warts. Glutaral has also been used topically for treating hyperhidrosis of the palms and soles, although other agents are generally preferred (see p.1580).

Preparations

BP 2008: Glutaraldehyde Solution; Strong Glutaraldehyde Solution;
USNF 26: Glutaral Disinfectant Solution;
USP 31: Glutaral Concentrate.

Proprietary Preparations (details are given in Part 3)
Arg.: Asepto-Glutaral†; ***Austral.:*** Diswart; ***Fr.:*** Cidex†; Sekucid†; Steranios; ***Ger.:*** Cidex†; Korsolex-Endo-Disinfectant; Sekumatic FD†; ***India:*** Glutrex†; ***Irl.:*** Glutarol; ***Ital.:*** Citrosteril Sterilferri; Diba; Eso Cem; Eso H1, HP, and HP1; Esoxid; Ferrisepti; SaniSteril Sterilferri; Sporacid†; Sporex†; Sporicidin; T5†; ***S.Afr.:*** Virogerm; ***Thai.:*** Deconex 50FF†; ***UK:*** ASEP; Glutarol; ***USA:*** Cetylcide-G; Cidex.

Multi-ingredient: ***Fr.:*** Aniospray 41; Bacterianos D†; Chlorispray†; Incidine†; ***Ger.:*** Aerodesin; Aseptisol†; Bacillocid rasant†; Bacillol plus; Buraton 10 F; Desoform†; Helipur H plus N; Incidin perfekt; Incidin Spezial; Incidur; Incidur Spray†; Kohrsolin; Kohrsolin FF; Korsolex basic; Korsolex Extra; Korsolex FF; Lysetol FF†; Lysoformin; Lysoformin 3000; Melsept SF; Melsept†;

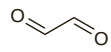
Melsitt; Minutil†; Prontocid N†; Sekucid konz†; Sekusept Extra N; Sekusept forte S; Sekusept forte†; Sporcid; Ultrasol-F; ***Ital.:*** Bergon†; Citrosteril Impronte; Dianil†; Eso Din; Esoform 92; Incidin Spezial; Melsept; Melsept SF; Sekucid; Sekumatic; Sekusept Extra N†; ***Thai.:*** Posequat with GA.

Glyoxal

Biformilo; Ethanedial; Glioxal; Oxalaldehyde. 1,2-Ethanedione.

$C_2H_2O_2$ = 58.04.

CAS — 107-22-2.



Profile

Glyoxal is an aldehyde used for the disinfection of surfaces and of medical and surgical instruments.

Preparations

Proprietary Preparations (details are given in Part 3)
Thai.: Deconex 50FF†.

Multi-ingredient: ***Fr.:*** Aniospray 41; Bacterianos D†; Incidine†; ***Ger.:*** Buraton 10 F; Desoform†; Freka-Nol; Fugisept†; Incidin perfekt; Incidin Spezial; Incidur; Lysoformin 3000; Meliseptol; Melsept SF; Melsept†; Minutil†; Sekusept forte†; Ultrasol-F; ***Ital.:*** Incidin Spezial; Indulfan; Melsept; Melsept SF; Melsept Spray.

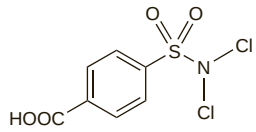
Halazone *(rINN)*

Halazona; Halazonum; Pantocide. 4-(Dichlorosulphamoyl)benzoic acid.

Галазон

$C_7H_5Cl_2NO_4S$ = 270.1.

CAS — 80-13-7.



Pharmacopoeias. In *US*.

USP 31 (Halazone). A white crystalline powder with a characteristic odour of chlorine. Soluble 1 in more than 1000 of water and of chloroform, 1 in 140 of alcohol, and 1 in more than 2000 of ether; soluble in glacial acetic acid. It dissolves in solutions of alkali hydroxides and carbonates with the formation of a salt. Store in airtight containers. Protect from light.

Profile

Halazone is a disinfectant with the general properties of chlorine (p.1638) in aqueous solution and is used for the disinfection of drinking water (p.1623). It contains about 52% of 'available chlorine' (see p.1638). One tablet containing 4 mg of halazone, stabilised with sodium carbonate and sodium chloride, may be sufficient to treat about 1 litre of water in about 30 minutes to 1 hour. The taste of residual chlorine may be removed by adding sodium thiosulfate.

Preparations

USP 31: Halazone Tablets for Solution.

Proprietary Preparations (details are given in Part 3)
Ital.: Steridrolo a rapida idrolisi†; ***Port.:*** Speton†.

Hexachlorophene *(BAN, rINN)*

G-11; Heksaklorofeeni; Hexachlorofen; Hexachlorophane; Hexachlorophène; Hexachlorophenum; Hexaclorofeno; Hexaklorofen. 2,2′-Methylenebis(3,4,6-trichlorophenol).

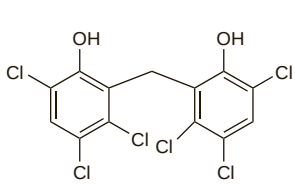
Гексахлорофен

$C_{13}H_6Cl_6O_2$ = 406.9.

CAS — 70-30-4.

ATC — D08AE01.

ATC Vet — QD08AE01; QP52AG02.



Pharmacopoeias. In *Br.* and *US*.

BP 2008 (Hexachlorophene). A white or pale buff, odourless or almost odourless, crystalline powder. Practically insoluble in water; freely soluble in alcohol; very soluble in acetone and in ether. It dissolves in dilute solutions of alkali hydroxides. Protect from light.

USP 31 (Hexachlorophene). A white or light tan, crystalline powder which is odourless or has a slight phenolic odour. Insoluble in water; freely soluble in alcohol, in acetone, and in ether; soluble in chloroform and in dilute solutions of fixed alkali hydroxides. Store in airtight containers. Protect from light.

Incompatibility. The activity of hexachlorophene may be reduced in the presence of blood or other organic material. It retains some activity in the presence of soap.

The activity has been reported[1] to be reduced by alkaline media and by nonionic surfactants such as polysorbate 80. It is extremely sensitive to iron, and to avoid discoloration due to traces of this metal in hexachlorophene detergent solutions, it is advisable to incorporate a sequestrant such as disodium edetate.[2]

1. Walter G, Gump W. Effect of pH on hexachlorophene. *Soap Chem Spec* 1963; **39:** 55–6.
2. Bell M. Hexachlorophene-based skin cleansers. *Specialities* 1965; **1:** 16–18.

Adverse Effects and Treatment

After ingestion, anorexia, nausea, vomiting, diarrhoea, abdominal cramps, dehydration, shock, and confusion may occur. Convulsions and death may follow. CNS stimulation, convulsions, and death have also occurred after absorption of hexachlorophene from burns and damaged skin. There have been reports showing that hexachlorophene can be absorbed through the skin of infants in amounts sufficient to produce spongy lesions of the brain, sometimes fatal.

Photosensitivity and skin sensitisation have occasionally occurred after repeated use of hexachlorophene.

Treatment of adverse effects is as for Phenol, p.1656.

Effects on the respiratory system. Asthma developed in a 43-year-old nurse after long-term exposure to hexachlorophene powder.[1]

1. Nagy L, Orosz M. Occupational asthma due to hexachlorophene. *Thorax* 1984; **39:** 630–1.

Precautions

Hexachlorophene should not be applied to mucous membranes, large areas of skin, or to burnt, damaged, or denuded skin and should not be used vaginally, applied under occlusive dressings, or applied to areas affected by dermatoses. It should be used with caution on infants, especially premature and low birth-weight neonates. Its use is not advised in pregnancy.

Preparations of hexachlorophene are liable to contamination, especially with Gram-negative bacteria.

Breast feeding. The American Academy of Pediatrics[1] considers that, while no effects on the infant have been reported, there is a possibility of contamination of breast milk with hexachlorophene used by breast-feeding mothers for nipple washing.

1. American Academy of Pediatrics. The transfer of drugs and other chemicals into human milk. *Pediatrics* 2001; **108:** 776–89. Correction. *ibid.*; 1029. Also available at: http://aappolicy.aappublications.org/cgi/content/full/pediatrics%3b108/3/776 (accessed 15/03/06)

Neonates. Spongiform encephalopathy has occurred in neonates who were treated topically with hexachlorophene.[1] Neonates with a birth-weight of 1.4 kg or less appeared to be most susceptible, whereas those weighing over 2 kg were not considered to be at risk.[1,2] Also most of the reports involved hexachlorophene applied in a concentration of 3%.

1. Anonymous. Hexachlorophene today. *Lancet* 1982; **i:** 87–8.
2. Plueckhahn VD, Collins RB. Hexachlorophene emulsions and antiseptic skin care of newborn infants. *Med J Aust* 1976; **1:** 815–19.

Pregnancy. Hexachlorophene is absorbed from the skin and crosses the placenta, but whether it has produced teratogenic effects is subject to debate.[1,2] However, it is considered best to avoid its use during pregnancy.

1. Halling H. Suspected link between exposure to hexachlorophene and malformed infants. *Ann N Y Acad Sci* 1979; **320:** 426–35.
2. Baltzar B, *et al.* Pregnancy outcome among women working in Swedish hospitals. *N Engl J Med* 1979; **300:** 627–8.

Pharmacokinetics

Hexachlorophene is absorbed from the gastrointestinal tract after accidental ingestion, and through intact and denuded skin. Percutaneous absorption may be significant in premature infants and through damaged skin. Hexachlorophene crosses the placenta.

Uses and Administration

Hexachlorophene is a chlorinated bisphenol antiseptic with a bacteriostatic action against Gram-positive organisms, but much less effective against Gram-negative organisms. It is most active at pH 5 to 6.

Hexachlorophene is mainly used in soaps and creams in a concentration of 0.23 to 3% and is an ingredient of various preparations used for skin disorders. After repeated use of these preparations for several days there is a marked diminution of the bacterial flora due to accumulation of hexachlorophene in the skin. This residual effect is rapidly lost after washing with unmedicated soap or alcohol.

A preparation containing 3% is used for the disinfection of the hands of surgeons and other health-care personnel. Thorough rinsing is recommended before drying. Hexachlorophene has been applied as a 0.33% dusting powder to the umbilical cord stump for the control of staphylococcal infection in the newborn. However, care is necessary when using hexachlorophene in neonates (see above).

Hexachlorophene sodium has also been used.

Disinfection. Eradication of an outbreak of infection with meticillin-resistant *Staphylococcus aureus* in a neonatal intensive care unit was achieved by use of hexachlorophene soap for hand washing. Previous infection-control measures including the use of chlorhexidine had failed.[1] For a discussion of staphylococcal infections and their treatment, see p.195.

1. Reboli AC, *et al.* Epidemic methicillin-gentamicin-resistant Staphylococcus aureus in a neonatal intensive care unit. *Am J Dis Child* 1989; **143:** 34–9.

Preparations

BP 2008: Hexachlorophene Dusting Powder;
USP 31: Hexachlorophene Cleansing Emulsion; Hexachlorophene Liquid Soap.

Proprietary Preparations (details are given in Part 3)
Cz.: Aknefug-Simplex†; ***Ger.:*** Aknefug simplex†; ***Indon.:*** Dermisan; ***Switz.:*** Acne-Med Wolff Simplex†; ***UK:*** Ster-Zac†; ***USA:*** Septisol†; ***Venez.:*** Solu-Hex.

Multi-ingredient: ***Braz.:*** Micosan†; ***Canad.:*** pHisoHex; ***Cz.:*** Aknefug†; Hexadecyl†; Septonex; ***Ger.:*** Aknefug-Emulsion†; ***Hung.:*** Phlogosol; ***Indon.:*** Topicide; ***Irl.:*** Torbetol; ***Israel:*** Acnex†; ***Port.:*** Anacal; ***Spain:*** Cresophene; ***Switz.:*** Acerbine†; ***Thai.:*** Cibis; ***USA:*** pHisoHex; ***Venez.:*** Permucal.

Hexamidine Isetionate *(BANM, rINNM)*

Heksamidino diizetionatas; Hexamidin-diisetionát; Hexamidin-dizetionát; Hexamidine Diisetionate; Hexamidine, diisétionate d'; Hexamidine Isethionate; Hexamidine, Isétionate d'; Hexamidini diisetionas; Hexamidini Isetionas; Isetionato de hexamidina. 4,4′-(Hexamethylenedioxy)dibenzamidine bis(2-hydroxyethanesulphonate).

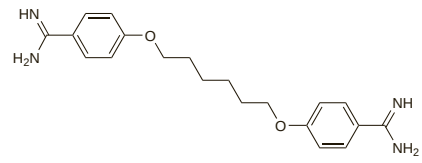
Гексамидина Изетионат

$C_{20}H_{26}N_4O_2.2C_2H_6O_4S$ = 606.7.

CAS — 3811-75-4 (hexamidine); 659-40-5 (hexamidine isetionate).

ATC — D08AC04; R01AX07; R02AA18; S01AX08; S03AA05.

ATC Vet — QD08AC04; QR01AX07; QR02AA18; QS01AX08; QS03AA05.



(hexamidine)

NOTE. The name Hexamidinum has been used for primidone (p.503).

Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Hexamidine Diisetionate; Hexamidine Isetionate BP 2008). A white or slightly yellow hygroscopic powder. Sparingly soluble in water; slightly soluble in alcohol; practically insoluble in dichloromethane. Store in airtight containers.

Profile

Hexamidine isetionate has antibacterial and antifungal properties and is available in preparations for the local treatment of minor infections.

Acanthamoeba keratitis. Hexamidine was suggested[1] as a possible alternative to propamidine for the treatment of *Acanthamoeba* keratitis (p.822) due to the poor cysticidal activity, chronic conjunctival infection, and resistance of some *Acanthamoeba* strains seen with propamidine.[1,2] Cures have been reported with 0.1% hexamidine used either as monotherapy[2,3] or with polihexanide.[2]

1. Perrine D, *et al.* Amoebicidal efficiencies of various diamidines against two strains of Acanthamoeba polyphaga. *Antimicrob Agents Chemother* 1995; **39:** 339–42.