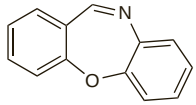
Profile
The leaves of the cowberry, *Vaccinium vitis-idaea* (Ericaceae), have astringent properties and have been used as a domestic remedy for diarrhoea.

Preparations
Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Pol.:*** Diuronis.

CR Gas
EA-3547; Gas CR. Dibenz[*b,f*][1,4]oxazepine.
$C_{13}H_9NO$ = 195.2.
CAS — 257-07-8.



Profile
A riot-control gas with irritant and lachrymatory properties similar to those of CS gas (p.2290); it is described as a tear gas. CR gas is reported not to be hydrolysed by water and therefore to be suitable for use in water cannons.

◊ References.

1. Blain PG. Tear gases and irritant incapacitants. 1-chloroacetophenone, 2-chlorobenzylidene malononitrile and dibenz[b,f]-1,4-oxazepine. *Toxicol Rev* 2003; **22:** 103–10.

Cranberry
Arándano.

Pharmacopoeias. *US* includes a liquid preparation.
USP 31 (Cranberry Liquid Preparation). The bright red juice derived from the fruits of *Vaccinium macrocarpon* or *V. oxycoccos* (Ericaceae). It contains no added substances and is for manufacturing purposes only. pH between 2.4 and 2.6. Store at 2° to 8°.

Profile
Cranberry consists of the fruit of *Vaccinium macrocarpon*, the American cranberry or *V. oxycoccus*, the European cranberry. Cranberry juice has been reported to reduce the incidence of urinary-tract infections.

Interactions. For a report of interactions between cranberry juice and *warfarin*, see p.1430.

Urinary-tract infections. Cranberries and cranberry juice have been used widely for many years for both the prevention and treatment of urinary-tract infections. A systematic review[1] of available data concluded that there was some evidence that cranberry juice for prevention may decrease the number of symptomatic urinary-tract infections in women over a 12 month period, particularly those with recurrent infections. However, evidence for efficacy in the elderly is inconclusive, and currently lacking in patients with neurogenic bladder. The authors recommended further controlled studies in all susceptible patient groups, and also into more acceptable dosage formulations. However, another such review[2] assessing the effectiveness of cranberry for treatment concluded that there was no good quality evidence to suggest that it is effective.

1. Jepson RG, Craig JC Cranberries for preventing urinary tract infections. Available in The Cochrane Database of Systematic Reviews; Issue 1. Chichester: John Wiley; 2008 (accessed 18/04/08).
2. Jepson RG, *et al.* Cranberries for treating urinary tract infections. Available in The Cochrane Database of Systematic Reviews; Issue 4. Chichester: John Wiley; 1998 (accessed 18/04/08).

Preparations
Proprietary Preparations (details are given in Part 3)
Arg.: Urosedac; ***Austral.:*** Uricleanse†; ***Canad.:*** Cran Max†; ***Fr.:*** Cys Control; Gyndelta; ***Ital.:*** Ivumir.

Multi-ingredient: ***Arg.:*** Uridon; ***Austral.:*** Bioglan Cranbiotic Super; Cranberry Complex; Extralife Uri-Care; ***Canad.:*** Cran-C†; Prostease; ***Hong Kong:*** Prostease; ***Pol.:*** Diabetosol; Urosept.

Crataegus
Aubépine; Aubépine, baie d' (hawthorn berries); Aubépine, feuille et fleur d' (hawthorn leaf and flowers); Biancospino; Crataegi folium cum flore (hawthorn leaf and flowers); Crataegi fructus (hawthorn berries); Crataegi Inflorescentia (hawthorn leaf and flowers); English Hawthorn; Galagonyatermés (hawthorn berries); Gudobelių vaisiai (hawthorn berries); Hagtornsbär (hawthorn berries); Haw; Hlohový plod (hawthorn berries); Kwiatostan głogu (hawthorn leaf and flowers); Orapihlajanmarja (hawthorn berries); Owoc głogu (hawthorn berries); Pilriteiro; Weissdorn; Whitethorn.
ATC — C01EB04.
ATC Vet — QC01EB04.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), and *US*.
Ph. Eur. 6.2 (Hawthorn Berries; Crataegi Fructus). The dried false fruits of *Crataegus oxyacantha* (*C. laevigata*), or *C. monogyna*, or their hybrids or a mixture of these false fruits. They contain not less than 1% of procyanidins, calculated as cyanidin chloride ($C_{15}H_{11}ClO_6$ = 322.7) with reference to the dried drug. Protect from light.
Ph. Eur. 6.2 (Hawthorn Leaf and Flower; Crataegi Folium cum Flore). The whole or cut, dried flower bearing branches of *Crataegus oxyacantha* (*C. laevigata*), or *C. monogyna*, or their hybrids or, more rarely, other European *Crataegus* species including *C. pentagyna*, *C. nigra*, and *C. azarolus*. It contains not less than 1.5% of flavonoids, calculated as hyperoside ($C_{21}H_{20}O_{12}$ = 464.4) calculated with reference to the dried drug. Protect from light.
USP 31 (Hawthorn Leaf with Flower). The dried tips of the flower-bearing branches up to 7 cm in length of *Crataegus monogyna* or *C. laevigata*, also known as *C. oxyacantha* (Rosaceae). It contains not less than 0.6% of *C*-glycosylated flavones, expressed as vitexin ($C_{21}H_{20}O_{10}$ = 432.4), and not less than 0.45% of *C*-glycosylated flavones, expressed as hyperoside, calculated with reference to the dried drug. Protect from light.

Profile
Crataegus contains flavonoid glycosides with cardiotonic properties similar to those of digoxin (p.1259). Crataegus is used in herbal medicine.

Homoeopathy. Crataegus has been used in homoeopathic medicines under the following names: Crataegus oxyacantha; Crat. oxy.

◊ Crataegus is used in herbal medicine for cardiovascular disorders.[1-4] A systematic review[4] of controlled studies concluded that it shows significant benefit compared with placebo as an adjunctive treatment for chronic heart failure. A review[3] of data currently available indicates that it is rarely associated with serious adverse affects, although the authors noted that problems may occur with its unsupervised use, especially if given with other drugs.

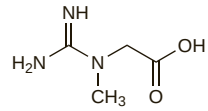
1. Rigelsky JM, Sweet BV. Hawthorn: pharmacology and therapeutic uses. *Am J Health-Syst Pharm* 2002; **59:** 417–22.
2. Chang Q, *et al.* Hawthorn. *J Clin Pharmacol* 2002; **42:** 605–12.
3. Daniele C, *et al.* Adverse-event profile of Crataegus spp.: a systematic review. *Drug Safety* 2006; **29:** 523–35.
4. Pittler MH, *et al.* Hawthorn extract for treating chronic heart failure. Available in The Cochrane Database of Systematic Reviews; Issue 1. Chichester: John Wiley; 2008 (accessed 18/04/08).

Preparations
Ph. Eur.: Hawthorn Leaf and Flower Dry Extract.

Proprietary Preparations (details are given in Part 3)
Austria: Bericard; Crataegan; Crataegutt; ***Belg.:*** Aubeline; ***Braz.:*** Dekatin; ***Chile:*** Cratenox; ***Cz.:*** Caj z Hlohu; Cardiplant†; Hloh; Kneipp Pflanzen-Dragees Weissdorn†; ***Fr.:*** Aubeline; Cardiocalm; Spasmosedine†; ***Ger.:*** Adenylocrat†; Ardeycordal mono; Basticrat†; Born; Chronocard N; Cordapur Novo; Corocrat†; Craegium; Cratae-Loges; Crataegutt; Crataegysat; Crataepas†; Cratecor†; Dr Niedermaier Herztonikum; Esbericard novo; Faros; Koro-Nyhadin; Kytta-Cor; Lomacard†; Natucor; Orthangin novo; Oxacant-mono; Poikilocard Mono†; Protecor novo; Regulacor-POS; Senicor†; Steicorton†; Stenocrat mono; ***Hung.:*** Crataegutt†; ***Pol.:*** Cardiplant; Chronocard; Cratonic; ***Rus.:*** Doppelherz Cardiovital (Доппельherц Кардиовитал); Novo-Passit (Ново-Пассит); ***Switz.:*** Cardiplant; Crataegisan; Crataegitan; Faros; Sedosan-N†; Vitacor.

Multi-ingredient: ***Arg.:*** Hepatodirectol; Passacanthine†; Sequals G; ***Austral.:*** Asa Tones; Bioglan Bioage Peripheral; Coleus Complex; Dan Shen Compound; For Peripheral Circulation Herbal Plus Formula 5; Gingo A†; Ginkgo Biloba Plus†; Ginkgo Complex†; Lifechange Circulation Aid†; Lifesystem Herbal Formula 6 For Peripheral Circulation†; Multi-Vitamin Day & Night†; ***Austria:*** Corodyn†; Omega; Rutivisal; Virgilocard; Wechseltee St Severin; ***Belg.:*** Natudor; Sedinal; Seneuval; ***Braz.:*** Anevrase†; Calman; Calmazin†; Calmiplan; Floriny; Pasalix; Pasic; Passi Catha†; Passiflora Composta†; Passiflorine; Sedalin†; Serenus; Sominex; ***Chile:*** Armonyl; ***Cz.:*** Alvisan Neo; Fytokliman Planta; Hertz- und Kreislaufte†; Hypotonicka; Novo-Passit; Valofyt Neo; ***Fr.:*** Anxoral†; Biocarde; Euphytose; Germose†; Lenicalm†; Mediflor Tisane Calmante Troubles du Sommeil No 14; Mediflor Tisane Circulation du Sang No 12; Natudor; Neuroflorine; Nicoprive; Nocvalene†; Okimus; Passiflorine; Passinevryl; Phytocalm†; Sedatif Tiber; Sedopal; Spasmine; Sympaneurol; Sympathyl; Sympavagol; Tranquital; Vagostabyl; ***Ger.:*** Antihypertonicum S; Ardeycordal N†; Asgoviscum N†; Biovital Aktiv†; Biovital Classic; Bomacorin; Cardibisana†; Cardio-Kreislauf-Longoral; Chlorophyl liquid "Schuh"†; Convallocor-SL; Convastabil; Cor-Select†; Fovysat†; Ginseng-Complex "Schuh"†; Herz-Starkung N†; Heusin†; Ilja Rogoff; JuVi-ton†; Korodin; Lacoerdin Mg Plus†; Nephrisan P†; Nitro-Crataegutt†; Oxacant N†; Oxacant-forte N†; Oxacant-Khella N†; Oxacant-sedativ; Passin; Presselin Arterien K 5 P†; Protecor; Salus Herz-Schutz-Kapseln†; Saluscor Herz-Schutz; Septacord; Stenocrat†; Tornix; Viscorapas duo†; ***Hong Kong:*** Ginkgo Plus Vivo-Livo†; ***Hung.:*** Biovital†; ***Indon.:*** Procardio; ***Israel:*** Nerven-Dragees; Passiflora; ***Ital.:*** Anevrasi; Bianco Val†; Controller; Lenicalm; Noctis; Parvisedil; Passiflorine; Sedatol; Sedofit; Sedopuer F; Vagostabil; ***Malaysia:*** Circarol; ***Mex.:*** Ifupasil; ***Philipp.:*** Circulan; ***Pol.:*** Alliorut; Biovital N; Cardiactiv; Cardiobonisol; Cardiol C; Cardiotonic; Cravisol; Fitoven; Ginkgocard; Herbaton; Kelicardina; Melis-Tonic; Melisal; Melissed; Neocardina; Neospasmina; Neospasmol; Nerwobonisol; Nerwonal; Passibil; Passispasmin; Passispasmol; Perfocrat; Sedomix; Tabletki Tonizujace; Venoforton; ***Port.:*** Gabisedil†; Neurocardol†; ***Rus.:*** Doppelherz Vitalotonik (Доппельherц Виталотоник); Herbion Drops for the Heart (Гербион Сердечные Капли); Passifit (Пассифит); ***Singapore:*** Noricaven†; ***Spain:*** Natusor High Blood Pressure†; Natusor Somnisedan†; Passiflorine; Sedasor†; Sedonat; Sonofit†; Tensiben†; ***Switz.:*** Arterosan Plus; Cardiaforce; Circulan; Dragees pour le coeur et les nerfs; Dragees sedatives Dr Welti; Gouttes pour le coeur et les nerfs Concentrees†; Ipasin; Phytomed Cardio; Sirop Passi-Par†; Strath Gouttes pour le coeur; Tisane pour le coeur et la circulation; Triallin; Valverde Coeur; ***Venez.:*** Cratex†; Equaliv; Ervostal; Eufytose†; Pasidor; Pasifluidina; Passiflorum.

Creatine
N-(Aminoiminomethyl)-*N*-methylglycine.
$C_4H_9N_3O_2$ = 131.1.
CAS — 57-00-1 (creatine); 6020-87-7 (creatine monohydrate).



Creatine Phosphate
Creatina, fosfato de; Creatine Phosphoric Acid; Fosfocreatine; Phosphocreatine. *N*-[Imino(phosphonoamino)-methyl]-*N*-methylglycine.
$C_4H_{10}N_3O_5P$ = 211.1.
CAS — 67-07-2 (creatine phosphate); 922-32-7 (creatine phosphate disodium).
ATC — C01EB06.
ATC Vet — QC01EB06.

Profile
Creatine is an endogenous substance found mainly in skeletal muscle of vertebrates. Creatine phosphate and its disodium salt have been tried in the treatment of cardiac disorders. Creatine phosphate has also been added to cardioplegic solutions. Creatine monohydrate has been tried in metabolic disorders and used as a dietary supplement. It is also under investigation for the treatment of Parkinson's disease, motor neurone disease (p.2380), Duchenne muscular dystrophy, and Huntington disease.

◊ References.

1. Pedone V, *et al.* An assessment of the activity of creatine phosphate (Neoton) on premature ventricular beats by continuous ECG monitoring in patients with coronary cardiac disease. *Clin Trials J* 1984; **21:** 91.
2. Ferraro S, *et al.* Acute and short-term efficacy of high doses of creatine phosphate in the treatment of cardiac failure. *Curr Ther Res* 1990; **47:** 917–23.
3. Mastoroberto P, *et al.* Creatine phosphate protection of the ischemic myocardium during cardiac surgery. *Curr Ther Res* 1992; **51:** 37–45.
4. Stöckler S, *et al.* Creatine replacement therapy in guanidinoacetate methyltransferase deficiency, a novel inborn error of metabolism. *Lancet* 1996; **348:** 789–90.
5. Mujika I, Padilla S. Creatine supplementation as an ergogenic aid for sports performance in highly trained athletes: a critical review. *Int J Sports Med* 1997; **18:** 491–6.
6. Juhn MS, Tarnopolsky M. Oral creatine supplementation and athletic performance: a critical review. *Clin J Sport Med* 1998; **8:** 286–97. Correction. *ibid.* 1999; **9:** 62.
7. Benzi G. Is there a rationale for the use of creatine either as nutritional supplementation or drug administration in humans participating in a sport? *Pharmacol Res* 2000; **41:** 255–64.
8. Persky AM, Brazeau GA. Clinical pharmacology of the dietary supplement creatine monohydrate. *Pharmacol Rev* 2001; **53:** 161–76.
9. Mazzini L, *et al.* Effects of creatine supplementation on exercise performance and muscular strength in amyotrophic lateral sclerosis: preliminary results. *J Neurol Sci* 2001; **191:** 139–44.
10. Groeneveld JG, *et al.* A randomized sequential trial of creatine in amyotrophic lateral sclerosis. *Ann Neurol* 2003; **53:** 437–45.
11. Persky AM, *et al.* Pharmacokinetics of the dietary supplement creatine. *Clin Pharmacokinet* 2003; **42:** 557–74.
12. Shefner JM, *et al.* A clinical trial of creatine in ALS. *Neurology* 2004; **63:** 1656–61.
13. Ellis AC, Rosenfeld Jo. The role of creatine in the management of amyotrophic lateral sclerosis and other neurodegenerative disorders. *CNS Drugs* 2004; **18:** 967–80.
14. Tarnopolsky MA, *et al.* Creatine monohydrate enhances strength and body composition in Duchenne muscular dystrophy. *Neurology* 2004; **62:** 1771–7.
15. Pline KA, Smith CL. The effect of creatine intake on renal function. *Ann Pharmacother* 2005; **39:** 1093–6.
16. Hersch SM, *et al.* Creatine in Huntington disease is safe, tolerable, bioavailable in brain and reduces serum 8OH2'dG. *Neurology* 2006; **66:** 250–2.
17. Bender A, *et al.* Creatine supplementation in Parkinson disease: a placebo-controlled randomized pilot trial. *Neurology* 2006; **67:** 1262–4.
18. Kley RA, *et al.* Creatine for treating muscle disorders. Available in The Cochrane Database of Systematic Reviews; Issue 1. Chichester: John Wiley; 2007 (accessed 18/04/08).

Preparations
Proprietary Preparations (details are given in Part 3)
Arg.: Musashi Creatina†; ***Cz.:*** Neoton; ***Ital.:*** Creatile; Neoton†; ***Pol.:*** Neoton; ***Rus.:*** Neoton (Неотон).

Multi-ingredient: ***Ital.:*** Fortium.

Creatinine
Creatinina. 2-Amino-1-methyl-4-imidazolidinone.
$C_4H_7N_3O$ = 113.1.
CAS — 60-27-5.

Pharmacopoeias. In *Ger.* Also in *USNF*.
USNF 26 (Creatinine). White, odourless, crystals or crystalline powder. Soluble in water; slightly soluble in alcohol; practically insoluble in acetone, in chloroform, and in ether.

Profile
Creatinine is used as a bulking agent for freeze-drying.

Plasma concentrations or clearance of endogenous creatinine are used as an index of renal function.

Creatinolfosfate Sodium *(rINNM)*

Créatinolfosfate de Sodium; Creatinolfosfato sódico; Natrii Creatinolfosfatum. The sodium salt of 1-(2-hydroxyethyl)-1-methylguanidine *O*-phosphate .

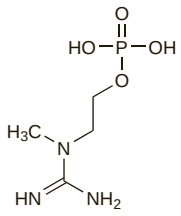
Натрий Креатинолфосфат

$C_4H_{11}N_3NaO_4P$ = 219.1.

CAS — 6903-79-3 (creatinolfosfate).

ATC — C01EB05.

ATC Vet — QC01EB05.



(creatinolfosfate)

Profile
Creatinolfosfate has been used as an adjuvant in the treatment of cardiac disorders.

Crotalaria

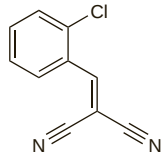
Profile
Crotalaria spp. have been used in herbal teas but liver damage has been reported after their ingestion, possibly due to their content of pyrrolizidine alkaloids.

CS Gas

CS Gazi; CS Spray; Gas CS.

$C_{10}H_5ClN_2$ = 188.6.

CAS — 2698-41-1.



Profile
CS gas (more properly CS spray) is the name commonly given to a particulate dispersion of α-(*o*-chlorobenzylidene) malonitrile, used as a riot-control agent or 'tear gas'. Its toxic effects include irritation of the eyes and nose, with copious lachrymation and rhinorrhoea; blepharospasm; a burning sensation of the mouth and throat; tightness in the chest, with difficulty in breathing; coughing; an increase in salivation; and retching and vomiting. These effects usually disappear within 15 minutes after exposure ends. The effects of pre-existing disease of the respiratory tract may be exacerbated. Erythema and blistering of the skin may occur.

If symptoms persist, the patient should be removed to a well ventilated area. Treatment is symptomatic. Contaminated skin may be washed with soap and water, but only if symptoms persist since exposure to water may initially exacerbate symptoms. If contamination of the eyes has been severe they should be irrigated with physiological saline or water.

◊ References.

1. Hu H, *et al.* Tear gas—harassing agent or toxic chemical weapon? *JAMA* 1989; **262:** 660–3.
2. Yih J-P. CS gas injury to the eye. *BMJ* 1995; **311:** 276.
3. Gray PJ. Treating CS gas injuries to the eye: exposure at close range is particularly dangerous. *BMJ* 1995; **311:** 871.
4. Jones GRN. CS sprays: antidote and decontaminant. *Lancet* 1996; **347:** 968–9.
5. Anderson PJ, *et al.* Acute effects of the potent lacrimator o-chlorobenzylidene malonitrile (CS) tear gas. *Hum Exp Toxicol* 1996; **15:** 461–5.
6. Anonymous. "Safety" of chemical batons. *Lancet* 1998; **352:** 159.
7. Varma S, Holt PJ. Severe cutaneous reaction to CS gas. *Clin Exp Dermatol* 2001; **26:** 248–50.
8. Nathan R, *et al.* Long-term psychiatric morbidity in the aftermath of CS spray trauma. *Med Sci Law* 2003; **43:** 98–104.
9. Blain PG. Tear gases and irritant incapacitants. 1-chloroacetophenone, 2-chlorobenzylidene malononitrile and dibenz[b,f]-1,4-oxazepine. *Toxicol Rev* 2003; **22:** 103–10.

Cubeb

Cubeb Berries; Cubeb Fruit; Cubeba; Java pepper; Tailed Pepper.

Profile
The unripe seeds of cubeb, *Piper cubeba* (Piperaceae), are the source of cubeb oil, which is used in perfumery and aromatherapy.

Preparations
Proprietary Preparations (details are given in Part 3)

Multi-ingredient: *Cz.:* Naturland Grosser Swedenbitter†; ***Rus.:*** Doktor Mom (Доктор Мом); Original Grosser Bittner Balsam (Оригинальный Большой Бальзам Биттнера).

Cucurbita

Abóbora; Calabaza, semillas de; Kürbissamen; Melon Pumpkin Seeds; Pepo; Semence de Courge.

Pharmacopoeias. In *Ger.*

Profile
Cucurbita consists of the seeds of *Cucurbita pepo* (Cucurbitaceae) or related species. It was formerly used for the expulsion of tapeworms (*Taenia*).

It is an ingredient of several herbal preparations used in urinary-tract disorders.

Preparations
Proprietary Preparations (details are given in Part 3)

Chile: Lefkur; ***Cz.:*** Turiplex†; ***Fr.:*** ViTiX; ***Ger.:*** Cysto-Urgenin; Granu Fink Kurbiskern; Nomon mono; Prosta Fink forte; Urgenin Cucurbitae oleum; Uvirgan mono; Vesiherb; ***Indon.:*** Inkurin; ***Pol.:*** Peponen; Peposterol; Prostogal†; ***Rus.:*** Peponen (Пепонен); Tycveolum (Тыквеол).

Multi-ingredient: ***Arg.:*** Cellskinlab Phyto Spot; Clean-AC; Cleanance; ***Austral.:*** Lifechange Mens Complex with Saw Palmetto†; ***Canad.:*** Prostate Ease; Prostease; ProstGard†; ***Chile:*** Clean-AC; Cleanance; ***Fr.:*** Cleanance; Cleanance K; Phytolongbronze; ***Ger.:*** Granu Fink Kurbiskern N; Granu Fink Prosta; Prostamed; Uvirgan N†; ***Hong Kong:*** Prostease; Sawmetto Vivo-Livo†; ***Indon.:*** Soprost; ***Philipp.:*** Castoria; ***Pol.:*** Prostamer†; ***Port.:*** Bioclin Sebo Care†; Prostamed†; ***Rus.:*** Bioprost (Биопрост); ***Switz.:*** Granu Fink Prosta; Prosta-Caps Chassot N; ***UK:*** Ymea.

Cusparia

Angostura; Angostura Bark; Carony Bark; Cusparia Bark.

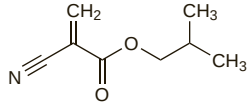
NOTE. 'Angostura Bitters' (*Dr. J.G.B. Siegert & Sons Ltd*) contains gentian and various aromatic ingredients but no cusparia; it is named after the town in which it was first made.

Profile
Cusparia, the bark of *Galipea officinalis* (Rutaceae), has been used as a bitter.

Cyanoacrylate Adhesives

Cianoacrilato, adhesivos de.

CAS — 1069-55-2 (bucrilate); 6606-65-1 (enbucrilate); 137-05-3 (mecrilate); 6701-17-3 (ocrilate);.



(bucrilate)

Profile
A number of cyanoacrylate compounds have been used as surgical tissue adhesives. They include:

- bucrilate (bucrylate; isobutyl 2-cyanoacrylate, $C_8H_{11}NO_2$ = 153.2)
- enbucrilate (butyl 2-cyanoacrylate, $C_8H_{11}NO_2$ = 153.2),
- mecrilate (mecrylate; methyl 2-cyanoacrylate, $C_5H_5NO_2$ = 111.1)
- ocrilate (ocrylate; octil 2-cyanoacrylate, $C_{12}H_{19}NO_2$ = 209.3).

Some cyanoacrylates are used for household purposes and as nail fixatives and others have been investigated as tubal occlusive agents for female sterilisation, for sclerotherapy in bleeding gastric varices (see under Monoethanolamine, p.2346), and for embolisation of intracranial vascular lesions. Cyanoacrylate adhesives have also been used to plug corneal perforations until donor tissue is available.

Adverse effects. Reports of inadvertent application of cyanoacrylate adhesives to the eyes,[1,2] mouth,[3] and ears.[4,5] Pulmonary embolisation of ocrilate has been reported[6] when it was used to obliterate gastric varices in a patient.

1. Lyons C, *et al.* Superglue inadvertently used as eyedrops. *BMJ* 1990; **300:** 328.
2. DeRespinis PA. Cyanoacrylate nail glue mistaken for eye drops. *JAMA* 1990; **263:** 2301.
3. Cousin GCS. Accidental application of cyanoacrylate to the mouth. *Br Dent J* 1990; **169:** 293–4.
4. O'Donnell JJ, *et al.* Cyanoacrylate adhesive mistaken for ear drops. *J Accid Emerg Med* 1997; **14:** 199.
5. Persaud R. A novel approach to the removal of superglue from the ear. *J Laryngol Otol* 2001; **115:** 901–2.
6. Rickman OB, *et al.* Pulmonary embolization of 2-octyl cyanoacrylate after endoscopic injection therapy for gastric variceal bleeding. *Mayo Clin Proc* 2004; **79:** 1455–8.

Treatment of adverse effects. In the event of accidental adhesion of the skin the bonded surfaces may be separated after application of acetone, prolonged soaking in warm (not hot) soapy water, and/or mixtures of alcohol and water. Application of liquid paraffin may help in removal from the skin. If necessary, the surfaces may be peeled or rolled apart with the aid of a spatula; attempts should not be made to pull the surfaces directly apart. Acetone and alcohol should not be used near or in the eyes. Solvents such as nitromethane, toluene, or xylene may be used to aid skin detachment from solid objects. Solvents should be used with care and should not be introduced into the oropharynx. Eyelids stuck together or bonded to the eyeball should be washed thoroughly with saline or water at room temperature for 15 minutes and a gauze patch applied; the eye will open without further action in 1 to 4 days. Manipulative attempts to open the eyes should not be made. Although cyanoacrylate introduced into the eyes may cause double vision and lachrymation there is usually no residual damage. If lips are accidentally stuck together plenty of warm water should be applied and maximum wetting from saliva inside the mouth encouraged. Lips should be peeled or rolled apart and not pulled. Adhesive introduced into the mouth solidifies and adheres, but saliva will lift the adhesive in ⁄ to 2 days. Care should be taken to avoid choking.

Heat is evolved on solidification of cyanoacrylate and in rare cases may cause burns.

Uses. References to the use of cyanoacrylate adhesives,[1-10] including bucrilate,[1,2] enbucrilate,[3,4] and ocrilate.[5-9]

1. Kind R, *et al.* Bucrylate treatment of bleeding gastric varices: 12 years' experience. *Endoscopy* 2000; **32:** 512–9.
2. Shepler TR, Seiff SR. Use of isobutyl cyanoacrylate tissue adhesive to stabilize external eyelid weights in temporary treatment of facial palsies. *Ophthal Plast Reconstr Surg* 2001; **17:** 169–73.
3. Schonauer F, *et al.* Use of Indermil tissue adhesive for closure of superficial skin lacerations in children. *Minerva Chir* 2001; **56:** 427–9.
4. Sinha S, *et al.* A single blind, prospective, randomized trial comparing n-butyl 2-cyanoacrylate tissue adhesive (Indermil) and sutures for skin closure in hand surgery. *J Hand Surg (Br)* 2001; **26:** 264–5.
5. Kutcher MJ, *et al.* Evaluation of a bioadhesive device for the management of aphthous ulcers. *J Am Dent Assoc* 2001; **132:** 368–76.
6. Puri P. Tissue glue aided lid repositioning in temporary management of involutional entropion. *Eur J Ophthalmol* 2001; **11:** 211–4.
7. Bernard L, *et al.* A prospective comparison of octyl cyanoacrylate tissue adhesive (dermabond) and suture for the closure of excisional wounds in children and adolescents. *Arch Dermatol* 2001; **137:** 1177–80.
8. Mattick A, *et al.* A randomised, controlled trial comparing a tissue adhesive (2-octylcyanoacrylate) with adhesive strips (Steristrips) for paediatric laceration repair. *Emerg Med J* 2002; **19:** 405–7.
9. Magee WP, *et al.* Use of octyl-2-cyanoacrylate in cleft lip repair. *Ann Plast Surg* 2003; **50:** 1–5.
10. Singer AJ, *et al.* The cyanoacrylate topical skin adhesives. *Am J Emerg Med* 2008; **26:** 490–6.

Preparations
Proprietary Preparations (details are given in Part 3)

Arg.: Dermabond; ***Fr.:*** Dermabond; ***UK:*** Dermabond; Histoacryl; Indermil; LiquiBand; SuperSkin.

Multi-ingredient: ***Ger.:*** Epiglu; ***Irl.:*** Epiglu; ***UK:*** Epiglu.

Cyclobutyrol Sodium *(rINNM)*

Ciclobutirol sódico; Cyclobutyrol Sodique; Natrii Cyclobutyrolum. Sodium 2-(1-hydroxycyclohexyl)butyrate.

Натрий Циклобутирол

$C_{10}H_{17}NaO_3$ = 208.2.

CAS — 512-16-3 (cyclobutyrol); 1130-23-0 (cyclobutyrol sodium).

ATC — A05AX03.

ATC Vet — QA05AX03.

Profile
Cyclobutyrol sodium is a choleretic that has been given by mouth. Cyclobutyrol betaine, cyclobutyrol calcium, and cyclobutyrol nicotinamide have been used similarly.

Preparations
Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austria:*** Trommgallol; ***Spain:*** Menabil Complex†; Salcemetic†; Sugarbil.