Chronic obstructive pulmonary disease. The value of mucolytic therapy in chronic obstructive pulmonary disease (COPD—p.1112) is controversial. Two studies have reported some improvements in lung function in patients with chronic bronchitis given carbocisteine for up to 6 months,[1,2] but it appeared to have no effect on the number of acute exacerbations.[1] However, later studies[3,4] have reported reductions in the number of acute exacerbations; the number of common colds was also lower in the carbocisteine group in one of the studies.[4] Carbocisteine may also produce some beneficial effects on sputum rheology.[2,5]

1. Grillage M, Barnard-Jones K. Long-term oral carbocisteine therapy in patients with chronic bronchitis: a double blind trial with placebo control. *Br J Clin Pract* 1985; **39:** 395–8.
2. Aylward M, *et al*. Clinical evaluation of carbocisteine (Mucolex) in the treatment of patients with chronic bronchitis: a double-blind trial with placebo control. *Clin Trials J* 1985; **22:** 36–44.
3. Allegra L, *et al*. Prevention of acute exacerbations of chronic obstructive bronchitis with carbocysteine lysine salt monohydrate: a multicenter, double-blind, placebo-controlled trial. *Respiration* 1996; **63:** 174–80.
4. Yasuda H, *et al*. Carbocisteine reduces frequency of common colds and exacerbations in patients with chronic obstructive pulmonary disease. *J Am Geriatr Soc* 2006; **54:** 378–80.
5. Braga PC, *et al*. Identification of subpopulations of bronchitic patients for suitable therapy by a dynamic rheological test. *Int J Clin Pharmacol Res* 1989; **IX:** 175–82.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Mucolitic; Salvitos; ***Belg.:*** Bronchathiol†; Muco Rhinathiol; Mucosteine†; Romilar Mucolyticum; Siroxyl; Soludril Expectorans; ***Braz.:*** Carbocin; Carbofan; Carbotoss; Carboxil†; Certuss; Fluitoss; Fluizan†; Mucocis; Mucocistein; Mucofan; Mucoflux; Mucolab; Mucolisil; Mucolitic; Mucolix; Mucotoss; ***Chile:*** Coldin; ***Cz.:*** Fenorin; Mucopront†; Pectodrill; Rhinathiol†; ***Fin.:*** Reodyn; Toclapekt†; ***Fr.:*** Actifed Expectorant†; Bronchathiol; Bronchokod; Broncoclar; Broncorinol Expectorant†; Bronkirex†; Codotussyl Expectorant; Dimotapp Expectorant†; Drill Expectorant; Ergix; Exotoux; Fluditec; Fluvic; Humex Expectorant; Muciclar; Pectosan Expectorant; Pharmakod expectorant; Rhinathiol; Sirop des Vosges Expectorant†; Solutricine Expectorant†; Toclase Expectorant†; Tussilene†; ***Ger.:*** Mucopront†; Sedotussin muco†; Transbronchin; ***Gr.:*** Allstam; Bronchiole†; Ceflavit†; Chilvax; Divalio†; Duxil; Ectofus; Estival; Mucorem†; Mucothiol; Pneumol; Pulmoclase; Santamex-Expectorant†; Santamex†; Trusil; ***Hong Kong:*** Fluifort; Mucospect; Purasol; Rhinathiol; Solmux; ***Hung.:*** Drill Expectorant; Fenorin; Mucopront; NeoCitran Expectorant; Rhinathiol; Solucis; ***Indon.:*** Broncholit; Mucocil; Solmux; ***Irl.:*** Benylin Clear Action; Exputex; Mucodyne; Mucogen; Mucolex; Pulmoclase; Viscolex; ***Israel:*** Mical; Mucolit; Mucomed; ***Ital.:*** Broncomucil; Bronx†; Carbocit; Fluifort; Lisomucil; Mucocis; Mucojet†; Mucolase; Mucostar; Mucotreis; Polifluidil†; Polimucil; Reomucil†; Sinecod Tosse Fluidificante; Solucis; Tossefluid†; ***Jpn:*** Mucodyne; ***Malaysia:*** Fluifort; Kastipron; Mucopront†; Pabron Cough; Rhinathiol; SCMC; ***Mex.:*** Arbistin; Mucolin; ***Neth.:*** Dampo Solvopect; Mucodyne; Pectocold; Rami Slijmoplossende; Rhinathiol; ***Philipp.:*** Abluent; Aflem; Ameustyn; Bromycil; Broncocent; Broxytone; Carboflem; Carbosol; Cysdexpel; Emuxel; Esboxyl; Fayerex; Fluralex; Genecar; Lofenin; Loviscol; Mediphlegm; Pertussin; Phlegmol; Solmux; Solplem; Trimulex; Westcarbox; Zylotin; Zymelytic; ***Pol.:*** Mukolina; PectoDrill; ***Port.:*** Drill Mucolitico; Finatux; Mucolex; Mucorespiral; Mucorhinathiol Infantil; Mucorhinathiol Mucoral; Pulmiben; Pulmoclase†; ***Rus.:*** Bronchobos (Бронхобос); Fluditec (Флюдитек); Fluifort (Флуифорт); Mucodin (Мукодин); ***S.Afr.:*** Acuphlem; Betaphlem; Bronchette; Co-Flem; Flemex; Flemgo; Flemlite; Lessmusec; Medphlem; Mucocaps†; Mucoflem; Mucoless; Mucolinct; Mucosirop†; Mucospect; ***Singapore:*** Mucopront†; Rhinathiol; SCMC; ***Spain:*** Actithiol; Anatac; Fluidin Mucolitico; Iniston Mucolitico; Mucovital; Pectodrill; Pectox; Viscoteina; ***Switz.:*** Mephathiol; Mucogeran†; Mucoseptal†; Pectox; Rhinathiol; Tussantiol; ***Thai.:*** Amicof; Bocytin; Carbocter; Carbomed; Cisteine†; Exflem; Flemex; Fluifort; I-Cof; Mucolex; Mucomex; Mucopront†; Muflex; Murhinal; Rhinathiol; Rhinex; Siflex; Solmux; Throatsil-CBS; ***Turk.:*** Mucocis; Mukoliz; Mukotik; ***UK:*** Mucodyne; ***Venez.:*** Broxolflem; Cisteinol†; Gulaper; Loganil; Loviscol; Mucofar; Mucopront.

Multi-ingredient: ***Arg.:*** Mucolitic Antitusivo†; Polimucil†; ***Fr.:*** Rhinathiol Promethazine; ***Gr.:*** Carbozor; Flemagon; Grupozil; Gutman; Mucostein; Pneumol Plus; Polimucil; Respinorm; Sevlenyl; Sobrein; Sorbexyl; Vanesin; ***Hong Kong:*** Mucosin; Rhinathiol Promethazine; ***India:*** Caceff; Carbomox; Moxycarb-DT†; ***Ital.:*** Broncofluid; Keraflex; Libexin Mucolitico; ***Malaysia:*** Mucoease Plus; Rhinathiol Promethazine; SCMC Promethazine†; ***Mex.:*** Mucolin A; ***Philipp.:*** Solmux-Broncho (Reformulated); ***Port.:*** Bronquial; Niflux; ***Singapore:*** Rhinathiol Promethazine; ***Spain:*** Actithiol Antihist; Bronquicisteina; Eduprim Mucolitico; ***Switz.:*** Rhinathiol Promethazine; Triofan.

Clobutinol Hydrochloride *(rINNM)*

Clobutinol, Chlorhydrate de; Clobutinoli Hydrochloridum; Hidrocloruro de clobutinol; KAT-256. 2-(4-Chlorobenzyl)-3-(dimethylaminomethyl)butan-2-ol hydrochloride.

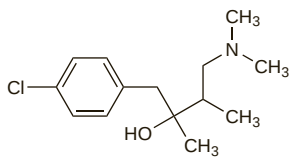
Клобутинола Гидрохлорид

$C_{14}H_{22}ClNO,HCl$ = 292.2.

CAS — 14860-49-2 (clobutinol); 1215-83-4 (clobutinol hydrochloride).

ATC — R05DB03.

ATC Vet — QR05DB03.



(clobutinol)

Profile

Clobutinol hydrochloride is a centrally acting cough suppressant for non-productive cough (p.1547) that has been given orally in doses of 40 to 80 mg three times daily; it has also been given by subcutaneous, intramuscular, or intravenous injection. However, the EMEA has recommended for its withdrawal due to the risk of QT interval prolongation.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Proking; Silomat†; ***Austria:*** Silomat†; ***Belg.:*** Silomat†; ***Braz.:*** Silomat†; ***Chile:*** Broncodual; Calfetos; Clobatos†; Cloval; Pulbronc Simple; Silomat†; ***Cz.:*** Silomat†; ***Fin.:*** Mixtus; Silomat†; ***Fr.:*** Silomat†; ***Ger.:*** Hustenstiller†; Nullatuss†; Rofatuss†; Silomat†; stas-Hustenstiller N†; Tussed†; ***Gr.:*** Silomat†; ***Ital.:*** Silomat-Fher†; ***Malaysia:*** Silomat†; ***Port.:*** Silomat†; ***Singapore:*** Silomat†; ***Thai.:*** Silomat†; ***Venez.:*** Silomat†.

Multi-ingredient: ***Arg.:*** Bronquisedan; Bronquisedan Mucolitico; ***Braz.:*** Hytos Plus; Silomat Plus†; ***Chile:*** Broncodual Compuesto; Cloval Compuesto; Pulbronc; Solvanol; Tusabron; Vapoflu; ***Fr.:*** Silomat†; ***Indon.:*** Silomat Compositum; ***S.Afr.:*** Silomat DA†; ***UAE:*** Orcinol; ***Venez.:*** Silomat Compositum†.

Clofedanol Hydrochloride *(BANM, rINNM)*

Chlophedianol Hydrochloride *(USAN)*; Clofédanol, Chlorhydrate de; Clofedanoli Hydrochloridum; Hidrocloruro de clofedanol; SL-501. 2-Chloro-α-(2-dimethylaminoethyl)benzyl alcohol hydrochloride.

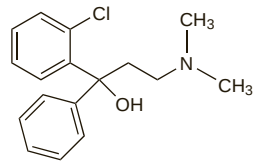
Клофеданола Гидрохлорид

$C_{17}H_{20}ClNO,HCl$ = 326.3.

CAS — 791-35-5 (clofedanol); 511-13-7 (clofedanol hydrochloride).

ATC — R05DB10.

ATC Vet — QR05DB10.



(clofedanol)

Pharmacopoeias. In *Jpn*.

Profile

Clofedanol hydrochloride is a centrally acting cough suppressant for non-productive cough (p.1547) that has been given in oral doses of 25 mg three or four times daily. For children's doses, see Administration in Children, below.

Administration in children. The following oral doses of clofedanol hydrochloride have been recommended for children:

- 2 to 6 years: 12.5 mg 3 or 4 times daily
- 6 to 12 years: 12.5 to 25 mg 3 or 4 times daily

Preparations

Proprietary Preparations (details are given in Part 3)
Canad.: Ulone; ***Hong Kong:*** Coldrin†; ***Singapore:*** Coldrin†; ***Spain:*** Gentos†.

Multi-ingredient: ***Arg.:*** Bronco Biotaer†; Causalon Bronquial; Cofron; Gentiabron†; Neo-Tosel†; Notozen; Pectoral Hebert; Selectus FN; Torfan H†; Toxam†; Toxambay; ***Chile:*** Bauxol; Brontal; Cofron†; Diadicon; Kolibel; Mucobrol.

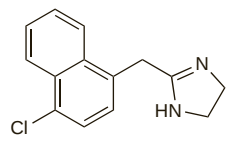
Clonazoline Hydrochloride *(rINNM)* ⊗

Clonazoline, Chlorhydrate de; Clonazolini Hydrochloridum; Hidrocloruro de clonazolina. 2-[(4-Chloro-1-naphthyl)methyl]-2-imidazoline hydrochloride.

Клоназолина Гидрохлорид

$C_{14}H_{13}ClN_2,HCl$ = 281.2.

CAS — 17692-28-3 (clonazoline); 23593-08-0 (clonazoline hydrochloride).



(clonazoline)

Profile

Clonazoline hydrochloride is a sympathomimetic with effects similar to those of naphazoline (p.1565) used for its vasoconstrictor activity in the local treatment of nasal congestion (p.1548).

Preparations

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

Cloperastine *(rINN)*

Cloperastina; Clopérastine; Cloperastinum; HT-11. 1-{2-[(*p*-Chloro-α-phenylbenzyl)oxy]ethyl}piperidine.

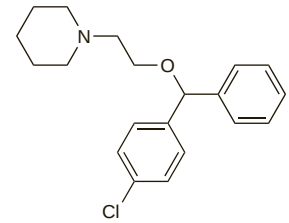
Клоперастин

$C_{20}H_{24}ClNO$ = 329.9.

CAS — 3703-76-2 (cloperastine); 132301-89-4 (levocloperastine).

ATC — R05DB21.

ATC Vet — QR05DB21.



Cloperastine Fendizoate *(rINNM)*

Clopérastine, Fendizoate de; Cloperastine Hydroxyphenylbenzoyl Benzoic Acid; Cloperastine Phendizoate; Cloperastini Fendizoas; Fendizoato de cloperastina.

Клоперастина Фендизоат

$C_{20}H_{24}ClNO,C_{20}H_{14}O_4$ = 648.2.

CAS — 85187-37-7 (cloperastine fendizoate); 220329-19-1 (levocloperastine fendizoate).

ATC — R05DB21.

ATC Vet — QR05DB21.

Cloperastine Hydrochloride *(rINNM)*

Clopérastine, Chlorhydrate de; Cloperastini Hydrochloridum; Hidrocloruro de cloperastina.

Клоперастина Гидрохлорид

$C_{20}H_{24}ClNO,HCl$ = 366.3.

CAS — 14984-68-0.

ATC — R05DB21.

ATC Vet — QR05DB21.

Pharmacopoeias. In *Jpn*.

Profile

Cloperastine is primarily a centrally acting cough suppressant used for non-productive cough (p.1547). It also has some antihistaminic action. The hydrochloride has been given orally as tablets in usual doses of 10 to 20 mg three times daily. Cloperastine fendizoate is used in oral liquid preparations in equivalent doses. Cloperastine fendizoate 17.7 mg is equivalent to about 10 mg of cloperastine hydrochloride. Levocloperastine fendizoate has been used similarly.

◊ References.

1. Aliprandi P, *et al*. Levocloperastine in the treatment of chronic nonproductive cough: comparative efficacy versus standard antitussive agents. *Drugs Exp Clin Res* 2004; **30:** 133–41.

Preparations

Proprietary Preparations (details are given in Part 3)
Belg.: Lysotossil; Novotossil†; Sekin; ***Braz.:*** Seki; ***Hong Kong:*** Uncough; ***Ital.:*** Cloel; Clofend; Mitituss; Nitossil; Politosse; Privituss; Quik; Seki; ***Jpn:*** Hustazol; ***Malaysia:*** Copastin; ***Mex.:*** Privituss; ***Port.:*** Tecnofox; ***Spain:*** Flutox; Sekisan.

Multi-ingredient: ***Thai.:*** Hustazol-C†.

Cocillana

Grape Bark; Guapi Bark; Huapi Bark.

Коккилана

CAS — 1398-77-2.

Profile

Cocillana is the dried bark of *Guarea guidonia* (*G. rusbyi*, *Sycocarpus rusbyi*, *G. trichilioides*; Meliaceae), a South American tree. It is used as an expectorant similarly to ipecacuanha (p.1562). It has been used in large doses as an emetic.

Preparations

Proprietary Preparations (details are given in Part 3)
Fin.: Codetabs.

Multi-ingredient: ***Braz.:*** Elixir de Marinheiro†; ***Canad.:*** Alsidrine†; Sirop Cocillana Codeine; Sirop Cocillana Compose; ***Fin.:*** Codesan Comp; Codesan N†; ***Hong Kong:*** Coci-Fedra; Coci-Fedra-C; Cocillana Christo; Cocillana Compound; Dextrocilla; Eurocilana; Mefedra-N†; ***Ital.:*** Broncosedina; ***S.Afr.:*** Cocillana Co; Corbar; ***Swed.:*** Cocillana-Etyfin; ***Venez.:*** Cerylana.

Coltsfoot

Coughwort; Fárfara; Huflattich; Tusílago; Tussilage.

Камчужная Трава

Pharmacopoeias. *Chin.* and *Fr.* include Coltsfoot Flower.

Profile

The leaves and flowers of coltsfoot (*Tussilago farfara*) have been used for their demulcent and supposed expectorant properties in the treatment of cough and other mild respiratory disorders. However, there has been some concern about potential hepatotoxicity and carcinogenicity due to the content of pyrrolizidine alkaloids.

◊ A review[1] of the actions and uses of coltsfoot pointed out that given the potential risks of its use long-term or in pregnancy, and the availability of other demulcent herbs, the use of coltsfoot preparations to treat throat irritations can no longer be considered appropriate.

1. Berry M. Coltsfoot. *Pharm J* 1996; **256:** 234–5.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Arg.:*** Arceligasol; Negacne; ***Cz.:*** Perospirt†; Species Pectorales Planta; ***Ital.:*** Lozione Same Urto; ***Pol.:*** Mucosit; Pyrosal; ***Spain:*** Llantusil†; ***UK:*** Antibron; Chesty Cough Relief.

Creosote

Creasote; Creosota; Creosotal (creosote carbonate); Wood Creosote.

Древесный Креозот

CAS — 8021-39-4 (creosote); 8001-59-0 (creosote carbonate).
ATC — R05CA08.
ATC Vet — QR05CA08.

Pharmacopoeias. In *Jpn.*

Profile

Creosote is a liquid consisting of a mixture of guaiacol, cresol, and other phenols obtained from wood tar. It possesses disinfectant properties and has been used as an expectorant. It has also been used as the carbonate and as lactocreosote.

Adverse effects are similar to those of Phenol, p.1656.

Commercial creosote used for timber preservation is obtained from coal tar.

Preparations

Proprietary Preparations (details are given in Part 3)

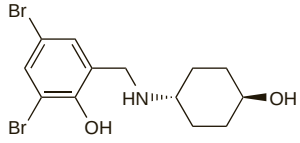
Multi-ingredient: ***Austral.:*** Compound Inhalation of Menthol; ***Austria:*** Famel cum Codein; Famel cum Ephedrin; ***Braz.:*** Rhum Creosotado; ***Hung.:*** Fagifor†; ***India:*** Pulmo-Cod (C & G); ***Ital.:*** Creosoto Composto; Famel†; ***Switz.:*** Famel; ***UK:*** Famel Original.

Dembrexine *(BAN, rINN)*

Dembreksiini; Dembrexin; Dembrexina; Dembrexinum; Dembroxol. *trans*-4-[(3,5-Dibromosalicyl)amino]cyclohexanol.

Дембрексин

$C_{13}H_{17}Br_2NO_2$ = 379.1.
CAS — 83200-09-3 (dembrexine); 52702-51-9 (dembrexine hydrochloride).



Pharmacopoeias. In *Eur.* (see p.vii) for veterinary use only.
Ph. Eur. 6.2 (Dembrexine Hydrochloride Monohydrate for Veterinary Use; Dembrexine Hydrochloride Monohydrate BP(Vet) 2008). A white or almost white, crystalline powder. Slightly soluble in water and in anhydrous ethanol; freely soluble in methyl alcohol.

Profile

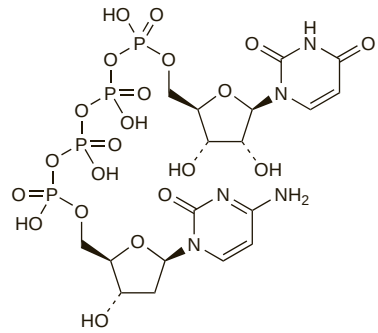
Dembrexine is a mucolytic used as the hydrochloride in veterinary medicine.

Denufosol Tetrasodium *(USAN, rINNM)*

Denufosol tetrasódico; Dénufosol tetrasodique; Denufosolum tetranatricum; INS-37217. 2′-Deoxycytidine(5′)tetraphospho(5′)uridine tetrasodium.

Денуфозол Тетранатрий

$C_{18}H_{23}N_5Na_4O_{21}P_4$ = 861.3.
CAS — 211448-85-0 (denufosol); 318250-11-2 (denufosol tetrasodium).



(denufosol)

Profile

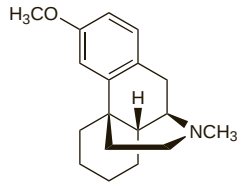
Denufosol tetrasodium is a selective $P2Y_2$-receptor agonist that stimulates chloride and water secretion from respiratory tract epithelial cells, and increases mucosal hydration and mucociliary clearance. An inhaled preparation is under investigation for the treatment of cystic fibrosis.

Dextromethorphan *(BAN, pINN)*

Dekstrometorfaani; Dextrométhorphane; Dextromethorphanum; Dextrometorfan; Dextrometorfano. (+)-3-Methoxy-9a-methylmorphinan; (9*S*,13*S*,14*S*)-6,18-Dideoxy-7,8-dihydro-3-*O*-methylmorphine.

Декстрометорфан

$C_{18}H_{25}NO$ = 271.4.
CAS — 125-71-3.
ATC — R05DA09.
ATC Vet — QR05DA09.



NOTE. The following terms have been used as 'street names' (see p.vi) or slang names for various forms of dextromethorphan: Bromage; Brome; Candy; CCC; C-C-C; Dex; Dextro; DM; Drex; DXM; Red Devils; Robo; Rojo; Skittles; Triple C; Triple C's; Tussin; Velvet; Vitamin D.

Pharmacopoeias. In *US.*
USP 31 (Dextromethorphan). A practically white to slightly yellow, odourless, crystalline powder. Practically insoluble in water; freely soluble in chloroform. Store in airtight containers.

Dextromethorphan Hydrobromide *(BANM, pINNM)*

Dekstrometorfaanihydrobromidi; Dekstrometorfan Hidrobromür; Dekstrometorfano hidrobromidas; Dekstrometorfanu bromowodorek; Dextromethorfan-hydrobromid monohydrát; Dextrométhorphane, bromhydrate de; Dextromethorphani hydrobromidum; Dextromethorphani Hydrobromidum Monohydricum; Dextrometorfán-hidrobromid; Dextrometorfanhydrobromid; Hidrobromuro de dextrometorfano. Dextromethorphan hydrobromide monohydrate.

Декстрометорфана Гидробромид

$C_{18}H_{25}NO,HBr,H_2O$ = 370.3.
CAS — 125-69-9 (anhydrous dextromethorphan hydrobromide); 6700-34-1 (dextromethorphan hydrobromide monohydrate).
ATC — R05DA09.
ATC Vet — QR05DA09.

Pharmacopoeias. In *Eur.* (see p.vii), *Int.*, *Jpn*, *US*, and *Viet.*
Ph. Eur. 6.2 (Dextromethorphan Hydrobromide). An almost white, crystalline powder. Sparingly soluble in water; freely soluble in alcohol. Protect from light.
USP 31 (Dextromethorphan Hydrobromide). Practically white crystals or crystalline powder having a faint odour. Soluble 1 in 65 of water; freely soluble in alcohol and in chloroform; insoluble in ether. pH of a 1% solution in water is between 5.2 and 6.5. Store in airtight containers.

Adverse Effects and Treatment

Adverse effects with dextromethorphan appear to be rare and may include dizziness and gastrointestinal disturbances. Excitation, confusion, and respiratory depression may occur after overdosage. Dextromethorphan has been subject to abuse, but there is little evidence of dependence of the morphine type.

◊ General references.

1. Bem JL, Peck R. Dextromethorphan: an overview of safety issues. *Drug Safety* 1992; **7:** 190–9.

Hypersensitivity. A fixed-drug reaction developed in a patient after ingestion of dextromethorphan 30 mg.[1] Oral provocation with dextromethorphan produced a positive reaction but the results of topical application tests were negative. Urticaria, angioedema, and shortness of breath were reported in another patient;[2] symptoms recurred on oral challenge, but no skin test was performed. Similar symptoms were reported in a third patient;[3] skin testing provoked a positive reaction. On oral rechallenge, the patient developed urticaria initially, followed by generalised erythema and pruritus and decreased blood pressure after a second dose.

1. Stubb S, Reitamo S. Fixed-drug eruption due to dextromethorphan. *Arch Dermatol* 1990; **126:** 970–1.
2. Knowles SR, Weber E. Dextromethorphan anaphylaxis. *J Allergy Clin Immunol* 1998; **102:** 316–17.
3. Robledo T, *et al.* Adverse reaction to dextromethorphan. *Allergy* 2004; **59:** 890.

Overdosage. There have been reports[1-7] of overdosage or accidental poisoning (usually in children) due to dextromethorphan, including rare fatalities. Naloxone may be effective in reversing toxicity. Extrapyramidal reactions were seen in a child who ingested dextromethorphan.[6] Overdosage has also been associated with abuse (see below).

1. Shaul WL, *et al.* Dextromethorphan toxicity: reversal by naloxone. *Pediatrics* 1977; **59:** 117–19.
2. Katona B, Wason S. Dextromethorphan danger. *N Engl J Med* 1986; **314:** 993.
3. Rammer L, *et al.* Fatal intoxication by dextromethorphan: a report on two cases. *Forensic Sci Int* 1988; **37:** 233–6.
4. Schneider SM, *et al.* Dextromethorphan poisoning reversed by naloxone. *Am J Emerg Med* 1991; **9:** 237–8.
5. Pender ES, Parks BR. Toxicity with dextromethorphan-containing preparations: a literature review and report of two additional cases. *Pediatr Emerg Care* 1991; **7:** 163–5.
6. Warden CR, *et al.* Dystonic reaction associated with dextromethorphan ingestion in a toddler. *Pediatr Emerg Care* 1997; **13:** 214–15.
7. Roberge RJ, *et al.* Dextromethorphan- and pseudoephedrine-induced agitated psychosis and ataxia: case report. *J Emerg Med* 1999; **17:** 285–8.

Precautions

Dextromethorphan should not be given to patients at risk of developing respiratory failure. Caution is needed in patients with a history of asthma and it should not be given during an acute attack. Care is also advisable in patients with bronchitis, emphysema, or in other conditions where chronic or persistent cough occurs.

Abuse. Dextromethorphan has been abused,[1-12] alone or with other drugs in over-the-counter preparations or as a powder sold under the name DXM. There have been a few reports of dependence,[1,2,11] but evidence of classical opioid dependence is generally considered to be lacking.

1. Fleming PM. Dependence on dextromethorphan hydrobromide. *BMJ* 1986; **293:** 597.
2. Orrell MW, Campbell PG. Dependence on dextromethorphan hydrobromide. *BMJ* 1986; **293:** 1242–3.
3. Walker J, Yatham LN. Benylin (dextromethorphan) abuse and mania. *BMJ* 1993; **306:** 896.
4. Wolfe TR, Caravati EM. Massive dextromethorphan ingestion and abuse. *Am J Emerg Med* 1995; **13:** 174–6.
5. Nordt SP. DXM: a new drug of abuse? *Ann Emerg Med* 1998; **31:** 794–5.
6. Cranston JW, Yoast R. Abuse of dextromethorphan. *Arch Fam Med* 1999; **8:** 99–100.
7. Price LH, Lebel J. Dextromethorphan-induced psychosis. *Am J Psychiatry* 2000; **157:** 304.
8. Noonan WC, *et al.* Dextromethorphan abuse among youth. *Arch Fam Med* 2000; **9:** 791–2.
9. Banerji S, Anderson IB. Abuse of Coricidin HBP cough and cold tablets: episodes recorded by a poison center. *Am J Health-Syst Pharm* 2001; **58:** 1811–14.
10. Food and Drug Administration. FDA warns against abuse of dextromethorphan (DXM) (issued 20 May 2005). Available at: http://www.fda.gov/bbs/topics/ANSWERS/2005/ANS01360.html (accessed 16/05/07)
11. Desai S, *et al.* Chronic addiction to dextromethorphan cough syrup: a case report. *J Am Board Fam Med* 2006; **19:** 320–3.
12. Bryner JK, *et al.* Dextromethorphan abuse in adolescence: an increasing trend: 1999-2004. *Arch Pediatr Adolesc Med* 2006; **160:** 1217–22.

Children. For doubts about the use of dextromethorphan as an antitussive in children see Cough, under Uses and Administration, below.

Interactions

Severe and sometimes fatal reactions have been reported after use of dextromethorphan in patients receiving