Eprozinol Hydrochloride *(rINNM)*

Éprozinol, Chlorhydrate d'; Eprozinoli Hydrochloridum; Hidrocloruro de eprozinol. 3-[4-(β-Methoxyphenethyl)piperazin-1-yl]-1-phenylpropan-1-ol dihydrochloride.

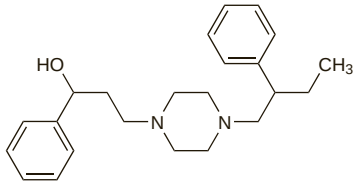
Эпрозинола Гидрохлорид

$C_{22}H_{30}N_2O_2,2HCl$ = 427.4.

CAS — 32665-36-4 (eprozinol).

ATC — R03DX02.

ATC Vet — QR03DX02.



(eprozinol)

Profile

Eprozinol hydrochloride has been given orally for its mucolytic or expectorant properties.

Adverse effects. Convulsions and coma were reported in a 19-year-old patient after taking eprozinol.[1]

1. Merigot P, *et al.* Les convulsions avec trois antitussifs dérivés substitués de la pipérazine: (zipéprol, éprazinone, éprozinol). *Ann Pediatr (Paris)* 1985; **32:** 504–11.

Preparations

Proprietary Preparations (details are given in Part 3)
Fr.: Eupneron†.

Erdosteine *(rINN)*

Erdosteiini; Erdostein; Erdosteína; Erdostéine; Erdosteinum. (±)-({[(Tetrahydro-2-oxo-3-thienyl)carbamoyl]methyl}thio)acetic acid.

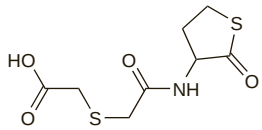
Эрдостеин

$C_8H_{11}NO_4S_2$ = 249.3.

CAS — 84611-23-4.

ATC — R05CB15.

ATC Vet — QR05CB15.



Adverse Effects and Precautions

Gastrointestinal disturbances may occur with erdosteine. Headache, dyspnoea, taste alterations, urticaria, erythema, and dermatitis have been reported rarely. Licensed product information for erdosteine suggests that it should not be used in patients with active peptic ulcer disease.

Pharmacokinetics

Erdosteine is rapidly absorbed after oral use; absorption is unaffected by food. Peak plasma concentrations are reached after about an hour. Erdosteine undergoes first-pass metabolism to an active metabolite, *N*-thiodiglycolyl-homocysteine. Plasma protein binding is about 64.5%. The elimination half-life is about 1.46 hours for erdosteine, and about 1.62 hours for the metabolite. Excretion is mainly via the urine, as metabolites; faecal elimination is negligible.

Uses and Administration

Erdosteine is a mucolytic that is used in the treatment of disorders of the respiratory tract characterised by productive cough (p.1547). It is given in usual oral doses of 300 mg twice daily for a maximum of 10 days.

Administration in hepatic and renal impairment. Exposure to erdosteine is increased in patients with hepatic impairment. UK licensed product information states that no increase in adverse effects has been observed in patients with mild liver failure, but restricts the dose in these patients to a maximum of 300 mg daily by mouth. Erdosteine is contra-indicated in severe hepatic impairment.

Although no difference in absorption or elimination has been seen in patients with moderate renal impairment, the risk of accumulation of metabolites cannot be excluded. For this reason, use of erdosteine is contra-indicated in patients with a creatinine clearance of less than 25 mL/minute.

Chronic obstructive pulmonary disease. Erdosteine has been used[1-3] in the management of chronic obstructive pulmonary disease (p.1112) but the value of mucolytics in this disorder is controversial.

1. Dechant KL, Noble S. Erdosteine. *Drugs* 1996; **52:** 875–81.
2. Marchioni CF, *et al.* Evaluation of efficacy and safety of erdosteine in patients affected by chronic bronchitis during an infective exacerbation phase and receiving amoxycillin as basic treatment (ECOBES, European Chronic Obstructive Bronchitis Erdosteine Study). *Int J Clin Pharmacol Ther* 1995; **33:** 612–18.
3. Moretti M, *et al.* The effect of long-term treatment with erdosteine on chronic obstructive pulmonary disease: the EQUAL-IFE Study. *Drugs Exp Clin Res* 2004; **30:** 143–52.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Amuctol†; Fluidasa; ***Austria:*** Erdomed; ***Belg.:*** Mucothera†; ***Braz.:*** Erdotin†; Flusten; ***Chile:*** Biopulmin; ***Cz.:*** Erdomed; ***Denm.:*** Erdotin; ***Fin.:*** Erdopect; ***Fr.:*** Edirel†; Vectrine; ***Gr.:*** Theovix; Tusselin; ***Hung.:*** Erdomed; ***Indon.:*** Vectrine; ***Ital.:*** Erdotin; ***Mex.:*** Dostein; Esteclin; ***Philipp.:*** Ectrin; ***Port.:*** Erdotin; ***Switz.:*** Mucofor; ***Turk.:*** Erdostin; ***UK:*** Erdotin.

Multi-ingredient: ***Mex.:*** Esteclin Bac.

Eriodictyon

Hierba santa; Mountain Balm; Yerba Santa.

Эриодиктион калифорнийский

CAS — 8013-08-9.

Profile

Eriodictyon consists of the dried leaves of *Eriodictyon californicum* (Hydrophyllaceae). It has been used as an expectorant. It has also been used in the treatment of dry mouth and to mask the taste of bitter drugs.

Preparations

Proprietary Preparations (details are given in Part 3)
Canad.: Mouth Kote; ***Hong Kong:*** Pretz†.

Multi-ingredient: ***Ital.:*** Broncosedina; ***UK:*** Saliva Natura; ***USA:*** Feminease; ***Venez.:*** Yerba Santa.

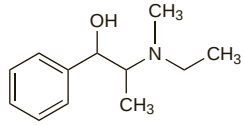
Etafedrine Hydrochloride *(BANM, USAN, rINNM)* ⊗

Étafédrine, Chlorhydrate d'; Etafedrini Hydrochloridum; Ethylephedrine Hydrochloride; Hidrocloruro de etafedrina. (–)-2-(Ethylmethylamino)-1-phenylpropan-1-ol hydrochloride.

Этафедрина Гидрохлорид

$C_{12}H_{19}NO,HCl$ = 229.7.

CAS — 7681-79-0 (etafedrine); 48141-64-6 ((–)-etafedrine); 5591-29-7 (etafedrine hydrochloride).



(etafedrine)

Profile

Etafedrine hydrochloride is a sympathomimetic related to ephedrine (p.1558). It is used for its bronchodilator effects in combination preparations for the relief of cough and associated respiratory-tract disorders.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Braz.:*** Broncolex†; EMS Expectorante; Revenil; Revenil Dospan; Revenil Expectorante; ***Canad.:*** Dalmacol; ratio-Calmydone; ***Indon.:*** Decolsin; ***S.Afr.:*** Nethaprin Dospan; Nethaprin Expectorant; ***Thai.:*** Brondil.

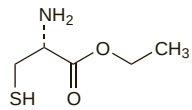
Ethyl Cysteine Hydrochloride

Etilcisteína, hidrocloruro de. Ethyl L-2-amino-3-mercaptopropionate hydrochloride.

Этиловый Эфир Цистеина Гидрохлорида

$C_5H_{11}NO_2S,HCl$ = 185.7.

CAS — 3411-58-3 (ethyl cysteine); 868-59-7 (ethyl cysteine hydrochloride).



(ethyl cysteine)

Pharmacopoeias. In *Jpn*.

Profile

Ethyl cysteine hydrochloride is a mucolytic that has been used in the treatment of disorders of the respiratory tract associated with productive cough.

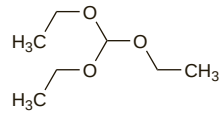
Ethyl Orthoformate

Ether de Kay; Triethoxymethane; Trietoximetano. Triethyl orthoformate.

Этиловый Эфир Ортомуравьиной Кислоты

$C_7H_{16}O_3$ = 148.2.

CAS — 122-51-0.



Pharmacopoeias. In *Fr.*

Profile

Ethyl orthoformate is a cough suppressant (see p.1547). It is reported to be a respiratory antispasmodic and has been given by mouth or rectally.

Fedrilate *(rINN)*

Fédrilate; Fedrilato; Fedrilatum; UCB-3928. 1-Methyl-3-morpholinopropyl perhydro-4-phenylpyran-4-carboxylate.

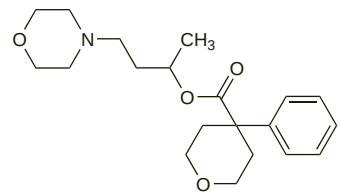
Федрилат

$C_{20}H_{29}NO_4$ = 347.4.

CAS — 23271-74-1.

ATC — R05DB14.

ATC Vet — QR05DB14.



Profile

Fedrilate is a cough suppressant used orally for non-productive cough.

Preparations

Proprietary Preparations (details are given in Part 3)
Braz.: Gotas Binelli.

Fenoxazoline Hydrochloride *(rINNM)* ⊗

Fénoxazoline, Chlorhydrate de; Fenoxazolini Hydrochloridum; Hidrocloruro de fenoxazolina. 2-(2-Isopropylphenoxymethyl)-2-imidazoline hydrochloride.

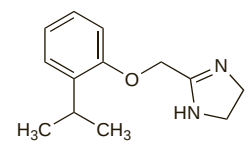
Феноксазолина Гидрохлорид

$C_{13}H_{18}N_2O,HCl$ = 254.8.

CAS — 4846-91-7 (fenoxazoline); 21370-21-8 (fenoxazoline hydrochloride).

ATC — R01AA12.

ATC Vet — QR01AA12.



(fenoxazoline)

Profile

Fenoxazoline hydrochloride is a sympathomimetic with effects similar to those of naphazoline (p.1565) that has been used topically for its vasoconstrictor properties in the symptomatic treatment of nasal congestion.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Nebulicina; ***Braz.:*** Aturgyl†; Nasofelin.

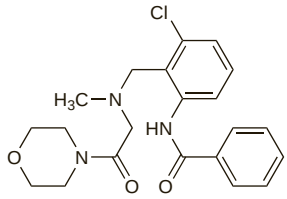
Fominoben Hydrochloride *(rINNM)*

Fominobène, Chlorhydrate de; Fominobeni Hydrochloridum; Hidrocloruro de fominobén; PB-89. 3′-Chloro-2′-[*N*-methyl-*N*-(morpholinocarbonylmethyl)aminomethyl]benzanilide hydrochloride.

Фоминобена Гидрохлорид

$C_{21}H_{24}ClN_3O_3$,HCl = 438.3.

CAS — 18053-31-1 (fominoben); 24600-36-0 (fominoben hydrochloride).



(fominoben)

Profile

Fominoben hydrochloride is a centrally acting cough suppressant (see p.1547) that is also reported to have respiratory stimulant properties. It is given in oral doses of 160 mg up to three times daily; it has also been given by slow intravenous injection.

Preparations

Proprietary Preparations (details are given in Part 3)
Jpn: Noleptan; ***Mex.:*** Noleptan; ***Spain:*** Tosifar.

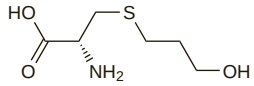
Fudosteine *(rINN)*

Fudosteína; Fudostéine; Fudosteinum; SS-320A. (–)-3-[(3-Hydroxypropyl)thio]-L-alanine.

Фудостеин

$C_6H_{13}NO_3S$ = 179.2.

CAS — 13189-98-5.



Profile

Fudosteine is an expectorant given orally in a dose of 400 mg three times daily.

Preparations

Proprietary Preparations (details are given in Part 3)
Jpn: Cleanal.

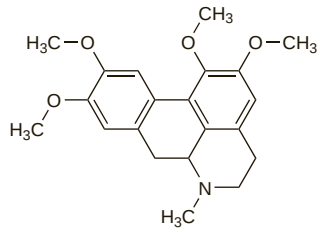
Glaucine

Boldine Dimethyl Ether; DL-832 (*dl*-glaucine phosphate); Glaucina; *dl*-Glaucine; MDL-832 (*dl*-glaucine phosphate). DL-1,2,9,10-Tetramethoxyaporphine.

Глауцин

$C_{21}H_{25}NO_4$ = 355.4.

CAS — 5630-11-5 (dl-glaucine); 73239-87-9 (dl-glaucine phosphate); 475-81-0 (d-glaucine); 5996-06-5 (d-glaucine hydrobromide).



(dl-glaucine)

Profile

Glaucine is a centrally acting cough suppressant used in non-productive cough (p.1547); it has been given as the phosphate.

d-Glaucine has also been used, as the hydrobromide and the hydrochloride. It has been obtained from *Glaucium flavum* (Papaveraceae).

Preparations

Proprietary Preparations (details are given in Part 3)
Rus.: Glauvent (Глаувент)†.

Multi-ingredient: ***Rus.:*** Bronchitussin (Бронхитусен); Bronchocin (Бронхоцин); Broncholytin (Бронхолитин).

Guacetisal *(rINN)*

Acetylsalicylic Acid Guaiacol Ester; Guacétisal; Guacetisalum. *o*-Methoxyphenyl salicylate acetate.

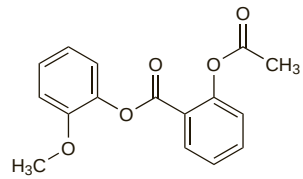
Гуацетисал

$C_{16}H_{14}O_5$ = 286.3.

CAS — 55482-89-8.

ATC — N02BA14.

ATC Vet — QN02BA14.



Profile

Guacetisal has been used in respiratory disorders as an expectorant (see p.1547). It has also been used as an antipyretic to reduce fever (p.10). It has been given by mouth and rectally.

Preparations

Proprietary Preparations (details are given in Part 3)
Ital.: Prontomucil.

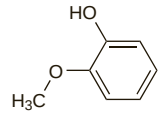
Guaiacol

Gaïacol; Guaiacolum; Guajacol; Guayacol; Gwajakol; Methyl Catechol. 2-Methoxyphenol.

Гваякол

$C_7H_8O_2$ = 124.1.

CAS — 90-05-1 (guaiacol); 553-17-3 (guaiacol carbonate); 60296-02-8 (calcium guaiacolglycolate); 4112-89-4 (guaiacol phenylacetate).



Pharmacopoeias. In *Eur.* (see p.vii). *Fr.* also includes guaiacol carbonate.

Ph. Eur. 6.2 (Guaiacol). A crystalline mass or colourless or yellowish hygroscopic liquid. Sparingly soluble in water; freely soluble in alcohol; very soluble in dichloromethane. Store in airtight containers. Protect from light.

Profile

Guaiacol has disinfectant properties and has been used in dentistry and as an expectorant for productive cough (p.1547).

In high concentrations, adverse effects are similar to, but less severe than, those of phenol (p.1656).

A wide range of salts and derivatives of guaiacol have been used similarly including the carbonate, cinnamate, ethylglycolate, calcium and sodium glycolates, phenylacetate, and phenylbutyrate. See also Guaifenesin, p.1561 and Sulfogaiacol, p.1573.

Preparations

Proprietary Preparations (details are given in Part 3)
Mex.: Eucaliptine.

Multi-ingredient: ***Arg.:*** Aseptobron; Atomo Desinflamante; Atomo Desinflamante Familiar; ***Belg.:*** Eucalyptine; Eucalyptine Pholcodine; Inopectol; ***Braz.:*** Canfomenol†; Egotussano†; Ozonyl; Transpulmin; Transpulmin Balsamo; Tripulmin Balsamico†; ***Canad.:*** Creo-Rectal; Demo-Cineol; Omni-Tuss†; Valda; ***Cz.:*** Biocalyptol S†; ***Fr.:*** Bronchorectine au Citral; Essence Algerienne; Pulmo Bailly; Pulmoserum; Valda; ***Ger.:*** Dalet Med Balsam†; ***Gr.:*** Gulamyl; ***Hong Kong:*** Biocalyptol†; Valda†; ***Irl.:*** Valda†; ***Ital.:*** Eugenol-Guaiacolo Composto; Fosfoguaiacol; Lactocol; Lipobalsamo; ***Mex.:*** Eucalin†; Guayalin; Guayalin-Plus†; ***Port.:*** Algina; Analgil; Valda†; ***Spain:*** Bronco Aseptilex Fuerte; Eucalyptospirine†; Tos Mai; ***UK:*** Dragon Balm; Pulmo Bailly; ***USA:*** Methagual; ***Venez.:*** Derpinol†.

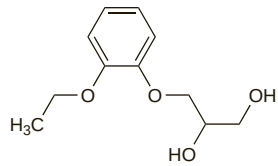
Guaietolin *(rINN)*

Glycerylguethol; Glyguetol; Guaietolina; Guaïétoline; Guaietolinum; Guayetolina. 3-(2-Ethoxyphenoxy)propane-1,2-diol.

Гвайэтолин

$C_{11}H_{16}O_4$ = 212.2.

CAS — 63834-83-3.



Profile

Guaietolin is an analogue of guaifenesin which is used as an expectorant (see p.1547). It has been given in oral doses of 300 to 600 mg two or three times daily.

Preparations

Proprietary Preparations (details are given in Part 3)
Fr.: Guethural.

Guaifenesin *(BAN, USAN, rINN)*

Glyceryl Guaiacolate; Glycerylguayacolum; Guaiacol Glycerol Ether; Guaiacyl Glyceryl Ether; Guaifenesiini; Guaifenesina; Guaïfénésine; Guaifénésine; Guaifenesinum; Guaiphenesin; Guajacolum Glycerolatum; Gvajfenezin; Gvajfenezinas. (*RS*)-3-(2-Methoxyphenoxy)propane-1,2-diol.

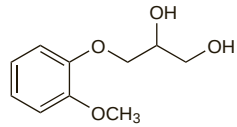
Гвайфенезин

$C_{10}H_{14}O_4$ = 198.2.

CAS — 93-14-1.

ATC — R05CA03.

ATC Vet — QM03BX90; QR05CA03.



Pharmacopoeias. In *Eur.* (see p.vii), *Jpn*, and *US*.

Ph. Eur. 6.2 (Guaifenesin). A white or almost white, crystalline powder. Sparingly soluble in water; soluble in alcohol.

USP 31 (Guaifenesin). A white to slightly grey crystalline powder. May have a slight characteristic odour. Soluble 1 in 60 to 70 of water; soluble in alcohol, in chloroform, and in propylene glycol; sparingly soluble in glycerol. Store in airtight containers.

Adverse Effects and Precautions

Gastrointestinal discomfort, nausea, and vomiting have occasionally been reported with guaifenesin, particularly in very large doses.

Abuse. Urinary calculi have been reported in patients consuming large quantities of over-the-counter preparations containing guaifenesin.[1,2] Spectroscopic analysis[1] revealed that the stones were composed of a calcium salt of beta-(2-methoxyphenoxy)-lactic acid, which is a metabolite of guaifenesin. Small quantities of ephedrine were also present in the stones of one of several patients who had ingested preparations containing a combination of guaifenesin and ephedrine.[2]

1. Pickens CL, *et al.* Abuse of guaifenesin-containing medications generates an excess of a carboxylate salt of beta-(2-methoxyphenoxy)-lactic acid, a guaifenesin metabolite, and results in urolithiasis. *Urology* 1999; **54:** 23–7.
2. Assimos DG, *et al.* Guaifenesin- and ephedrine-induced stones. *J Endourol* 1999; **13:** 665–7.

Porphyria. Guaifenesin is considered to be unsafe in patients with porphyria because it has been shown to be porphyrinogenic in *animals*.

Pharmacokinetics

Guaifenesin is well absorbed from the gastrointestinal tract. It is metabolised and then excreted in the urine.

Uses and Administration

Guaifenesin is reported to increase the volume and reduce the viscosity of tenacious sputum and is used as an expectorant for productive cough. It is given in oral doses of 200 to 400 mg every 4 hours. Modified-release preparations, given every 12 hours, are also available. For doses in children see Administration in Children, below.

Guaifenesin has been used similarly as the calcium salt.

Guaifenesin is used as an adjunct to anaesthesia in veterinary medicine.

Administration in children. Guaifenesin is licensed for use as an expectorant in children; however, over-the-counter cough and cold preparations containing expectorants (including guaifenesin) should be used with caution in children and generally avoided in those under 2 years of age (see p.1547). Typical licensed oral doses, given every 4 hours, are:

- 6 months to 2 years, 25 to 50 mg
- 2 to 6 years, 50 to 100 mg
- 6 to 12 years, 100 to 200 mg