

Ethanthiol

Ethyl Mercaptan Thioethyl Alcohol; Ethylmercaptan; I-Ethanthiol.

Этантиол; Этил Меркаптан

$C_2H_6S = 62.13$.

CAS — 75-08-1.

**Profile**

Mercaptans such as ethanthiol have an extremely disagreeable odour that is detectable by humans at very low concentrations and therefore they are added as a safety measure to odourless gases such as natural gas. Inhalation of high concentrations of ethanthiol can cause dizziness, headache, nausea, vomiting, and unconsciousness.

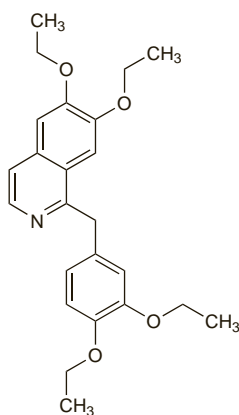
Ethaverine Hydrochloride (*rINNM*)

Éthavérine, Chlorhydrate d'; Ethaverini Hydrochloridum; Hidrocloruro de etaverina. 6,7-Diethoxy-1-(3,4-diethoxybenzyl)isoquinoline hydrochloride.

Этаверина Гидрохлорид

$C_{24}H_{29}NO_4 \cdot HCl = 432.0$.

CAS — 486-47-5 (ethaverine); 985-13-7 (ethaverine hydrochloride).



(ethaverine)

Profile

Ethaverine is the tetraethoxy analogue of papaverine (p.2191) and has been used as the hydrochloride as an antispasmodic in respiratory-tract, biliary, gastrointestinal, and genito-urinary disorders. It has also been used in migraine, vascular disorders and as an antiarrhythmic.

Ethaverine sulfamate has also been used.

Preparations

Proprietary Preparations (details are given in Part 3)

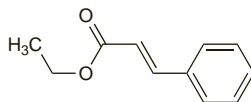
Multi-ingredient: **Austria:** Asthma Efeum; Gastripan; Oddispasmo!; **Braz.:** Eufemert; **Thal.:** Elzymf.

Ethyl Cinnamate

Cinamato de etilo. Ethyl (E)-3-phenylprop-2-enoate.

$C_{11}H_{12}O_2 = 176.2$.

CAS — 103-36-6.

**Pharmacopoeias. In Br:**

BP 2008 (Ethyl Cinnamate). A clear, colourless or almost colourless liquid with a fruity, balsamic odour. Practically insoluble in water; miscible with most organic solvents.

Profile

Ethyl cinnamate is used as a flavour and perfume; it is an ingredient of Tolu-flavour Solution (BP 2008).

Preparations

BP 2008: Tolu-flavour Solution.

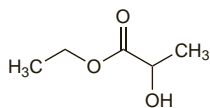
Ethyl Lactate

Etilo, lactato de.

Этилмлактат

$C_5H_{10}O_3 = 118.1$.

CAS — 97-64-3.

**Profile**

Ethyl lactate has been applied topically in the treatment of acne vulgaris. It is reported to lower the pH within the skin thereby exerting a bactericidal effect.

Ethyl lactate is also used in the flavouring of foods.

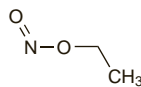
Ethyl Nitrite

Nitrous Acid Ethyl Ester; Nitrous Ether.

Этилнитрит

$C_2H_5NO_2 = 75.07$.

CAS — 109-95-5.



NOTE. Do not confuse with *O*-nitrosoethanol, a substance that has been referred to in the literature as 'ethyl nitrite gas'.

Profile

Ethyl nitrite has vasodilator effects similar to other volatile nitrites (see Amyl Nitrite, p.1437). Alcoholic solutions of ethyl nitrite (Ethyl Nitrite Spirit; Nitrous Ether Spirit; Sweet Nitre Spirit; Sp. Aether. Nitros.) have been used as a diaphoretic in the treatment of colds and fevers.

◇ Methaemoglobinaemia occurred in 2 infants given a folk remedy containing ethyl nitrite. Despite treatment with methylnionium chloride 1 infant died.¹

1. Chilcote RR, *et al.* Sudden death in an infant from methemoglobinemia after administration of "sweet spirits of nitre". *Pediatrics* 1977; **59**: 280-2.

Preparations

Proprietary Preparations (details are given in Part 3)

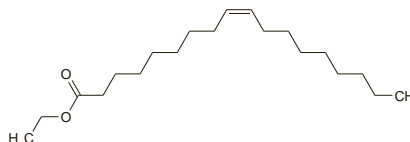
S.Afr.: Witdulsies.

Ethyl Oleate

Aethylis Oleas; Éthyle, oléate d'; Ethylis oleas; Ethyl-oléat; Etil-oléat; Etileleatas; Etyloleat; Etyyloleatti; Oleato de etilo.

$C_{20}H_{38}O_2 = 310.5$.

CAS — 111-62-6.



Pharmacopoeias. In Eur. (see p.vii). Also in *USNF*.

Ph. Eur. 6.2 (Ethyl Oleate). A clear, pale yellow or colourless liquid. It consists of the ethyl esters of fatty acids, mainly oleic acid. It may contain a suitable antioxidant. Practically insoluble in water; miscible with alcohol, with dichloromethane, and with petroleum spirit (40° to 60°). Protect from light.

USNF 26 (Ethyl Oleate). It consists of esters of ethyl alcohol and high-molecular-weight fatty acids, principally oleic acid. A mobile, practically colourless liquid. Insoluble in water; miscible with alcohol, with vegetable oils, with liquid paraffin, and with most organic solvents. Store in airtight containers. Protect from light.

Incompatibility. Ethyl oleate dissolves some types of rubber and causes others to swell.

Profile

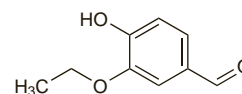
Ethyl oleate is used as an oily vehicle.

Ethyl Vanillin

Etilvanilina. 3-Ethoxy-4-hydroxybenzaldehyde.

$C_9H_{10}O_3 = 166.2$.

CAS — 121-32-4.

**Pharmacopoeias. In USNF.**

USNF 26 (Ethyl Vanillin). Fine, white or slightly yellowish crystals with a vanilla-like odour. M.p. is between 76° and 78°. Soluble 1 in 100 of water at 50° and 1 in 2 of alcohol; freely soluble in chloroform, in ether, and in solutions of alkali hydroxides. Its solutions are acid to litmus. Store in airtight containers. Protect from light.

Profile

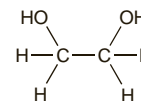
Ethyl vanillin is used as a flavour and in perfumery to impart the odour and taste of vanilla.

Ethylene Glycol

Ethylene Alcohol; Etilen Glikol; Etilenglikol; Glikol etylenowy; Glycol. Ethane-1,2-diol.

$C_2H_6O_2 = 62.07$.

CAS — 107-21-1.

**Adverse Effects**

Toxic effects arising from ingestion of ethylene glycol result from its major metabolites: aldehydes, glycolate, lactate, and oxalate. Clinical features may be divided into three stages depending on the time elapsed since ingestion. In the first 12 hours, the patient may show signs of drunkenness and experience nausea and vomiting. Convulsions and neurological defects may occur. From 12 to 24 hours, there may be tachycardia, mild hypertension, pulmonary oedema, and heart failure. Between 24 and 72 hours, patients with severe ethylene glycol poisoning may experience flank pain and renal involvement with associated decreased plasma concentrations of calcium and bicarbonate, metabolic acidosis, deposition of oxalate in tissues and kidney tubules, proteinuria, oxaluria, haematuria, and renal failure. There may be respiratory failure, cardiovascular collapse, and sometimes coma and death. The fatal dose is reported to be about 100 mL.

Skin irritation and penetration have been reported after topical application.

Diethylene glycol produces similar toxicity, except that there is no conversion to oxalate and there is greater nephrotoxicity. Poisoning has followed adulteration of medicinal products with diethylene glycol.

References.

1. Anonymous. Some wine to break the ice. *Lancet* 1985; **ii**: 254.
2. Vale JA, Buckley BM. Metabolic acidosis in diethylene glycol poisoning. *Lancet* 1985; **ii**: 394.
3. Buckley BM, Vale JA. Poisoning by alcohols and ethylene glycol. *Prescribers' J* 1986; **26**: 110-15.
4. Hanif M, *et al.* Fatal renal failure caused by diethylene glycol in paracetamol elixir: the Bangladesh epidemic. *BMJ* 1995; **311**: 88-91.
5. Lewis LD, *et al.* Delayed sequelae after acute overdoses or poisonings: cranial neuropathy related to ethylene glycol ingestion. *Clin Pharmacol Ther* 1997; **61**: 692-9.
6. O'Brien KL, *et al.* Epidemic of pediatric deaths from acute renal failure caused by diethylene glycol poisoning. *JAMA* 1998; **279**: 1175-80.
7. Singh J, *et al.* Diethylene glycol poisoning in Gurgaon, India, 1998. *Bull WHO* 2001; **79**: 88-95.
8. Hasbani MJ, *et al.* Encephalopathy and peripheral neuropathy following diethylene glycol ingestion. *Neurology* 2005; **64**: 1273-5.

Treatment of Adverse Effects

The stomach should be emptied by lavage if ingestion of ethylene glycol was within the preceding hour. Severe metabolic acidosis should be corrected. Hypocalcaemia may require correction with calcium gluconate in severe cases, although this is not usually done routinely because it may increase the formation of calcium oxalate crystals. Haemodialysis may be of value. Alcohol may be given by mouth or intravenously as it is a competitor of the metabolism of ethylene glycol. Alternatively fomepizole (p.1446), an alcohol-dehydrogenase inhibitor, may be used for the treatment of ethylene glycol poisoning.

References.

1. Harry P, *et al.* Ethylene glycol poisoning in a child treated with 4-methylpyrazole. *Pediatrics* 1998; **102**: E31.