Indon.: Yutopar; ***Israel:*** Ritopar; ***Ital.:*** Miolene; ***Port.:*** Pre-Par†; ***Spain:*** Pre-Par; ***Turk.:*** Pre-Par; ***UK:*** Yutopar.

Sulprostone *(USAN, rINN)*

CP-34089; 16-Phenoxy-ω-17,18,19,20-tetranor-prostaglandin E_2-methylsulfonylamide; SHB-286; Sulproston; Sulprostona; Sulprostoni; Sulprostonum; ZK-57671. (*Z*)-7-{(1*R*,2*R*,3*R*)-3-Hydroxy-2-[(*E*)-(3*R*)-3-hydroxy-4-phenoxybut-1-enyl]-5-oxocyclopentyl}-*N*-(methylsulphonyl)hept-5-enamide.

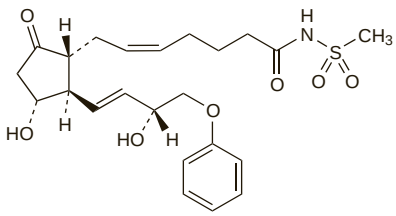
Сульпростон

$C_{23}H_{31}NO_7S$ = 465.6.

CAS — 60325-46-4.

ATC — G02AD05.

ATC Vet — QG02AD05.



Adverse Effects and Precautions

As for Dinoprostone, p.2007. In some countries, such as France, the licensed product information for sulprostone contra-indicates its use in smokers or those who have smoked in the last 2 years, and in women over 35 years of age.

Once a prostaglandin has been given to terminate pregnancy it is essential that termination take place; if the prostaglandin is unsuccessful other measures should be used.

Effects on the cardiovascular system. A 31-year-old woman died from cardiovascular shock during an abortion induced by mifepristone followed by sulprostone. She had 12 children, one previous abortion, and was a heavy cigarette smoker.[1] Four other deaths with sulprostone had not been associated with abortion. Other reported cases that did not result in death have included myocardial infarction in a 32-year-old woman given sulprostone for intra-uterine fetal death,[2] and cardiac arrest in a 38-year-old woman, with no history of smoking, after sulprostone was given by both intramyometrial and intravenous bolus injection for postpartum haemorrhage;[3] in both cases the authors suggested that sulprostone had caused coronary artery spasm.

Inadvertent subcutaneous infusion of sulprostone was thought to have caused arterial spasm with pain and oedema in the arm of a woman being treated for postpartum haemorrhage; she recovered after treatment with iloprost infusion.[4]

1. Anonymous. A death associated with mifepristone/sulprostone. *Lancet* 1991; **337:** 969–70.
2. Fliers E, *et al.* A prostaglandin analogue as a probable cause of myocardial infarction in a young woman. *BMJ* 1991; **302:** 416.
3. Chen FG, *et al.* Cardiac arrest associated with sulprostone use during caesarean section. *Anaesth Intensive Care* 1998; **26:** 298–301.
4. de Koning YWCM, *et al.* Critical limb ischemia after accidental subcutaneous infusion of sulprostone. *Eur J Obstet Gynecol Reprod Biol* 1995; **61:** 171–3.

Effects on the nervous system. For a report of convulsions in epileptic patients given sulprostone, see under Dinoprostone, p.2007.

Effects on the uterus. For reference to hyperstimulation and uterine rupture after use of prostaglandins, including sulprostone, for termination of pregnancy or induction of labour, see under Dinoprostone, p.2007.

Interactions

As for Dinoprostone, p.2008.

Uses and Administration

Sulprostone is a synthetic derivative of dinoprostone (prostaglandin E_2; p.2007) that has uterine stimulant effects. It is used for dilatation of the cervix before surgical termination of pregnancy in the first trimester, for medical termination of pregnancy in the second trimester (p.2004), and to empty the uterus in missed abortion, hydatidiform mole, and intra-uterine fetal death. It is also used to control postpartum haemorrhage (p.2003).

Sulprostone is given by intravenous infusion. A dose of 500 micrograms over 3 to 6 hours is used for cervical dilatation in the first trimester. For termination of pregnancy in the second trimester, or to empty the uterus, sulprostone is infused at a rate of 100 micrograms/hour for up to 10 hours; if necessary the infusion rate may be increased to up to 500 micrograms/hour, to a maximum total dose of 1.5 mg in 24 hours. If termination is unsuccessful the course may be repeated once, 12 to 24 hours after the end of the first infusion.

To control postpartum haemorrhage, an initial infusion of 100 micrograms/hour is given. This may be increased to 500 micrograms/hour if necessary to control bleeding, then reduced to a maintenance dose of 100 micrograms/hour. A total dose of 1.5 mg in 24 hours should not be exceeded.

Sulprostone has also been given extra-amniotically and locally into the cervix. It has also been given by the intramuscular route, but this is no longer recommended.

Preparations

Proprietary Preparations (details are given in Part 3)

Austria: Nalador; ***Fin.:*** Nalador†; ***Fr.:*** Nalador; ***Ger.:*** Nalador; ***Hong Kong:*** Nalador; ***Hung.:*** Nalador†; ***Ital.:*** Nalador; ***Neth.:*** Nalador; ***Port.:*** Nalador; ***Switz.:*** Nalador; ***Thai.:*** Nalador.

Organic Solvents

Most of the solvents described in this chapter have no specific therapeutic use. Additional solvents used in pharmacy and described in other chapters include alcohols, chlorinated hydrocarbons such as chloroform and trichloroethylene, fixed oils, glycols, paraffins, and water.

Organic solvents are widely used in industry and toxicity has been associated with acute or chronic exposure. due to inhalation, ingestion, or absorption through the skin. Organic solvents are irritant to the skin and mucous membranes, and often affect the CNS. They may sensitise the myocardium to catecholamines and cardiac arrhythmias may occur. Chronic exposure may lead to central and peripheral neurotoxicity, as well as to renal toxicity and hepatotoxicity.

◊ References.

1. White RF, Proctor SP. Solvents and neurotoxicity. *Lancet* 1997; **349:** 1239–43.

Abuse. Since they are volatile liquids and have CNS effects many organic solvents are implicated in volatile substance abuse. Clinical features of intoxication are similar to those of alcohol intoxication, with initial CNS stimulation followed by CNS depression, which may progress to delirium, convulsions, coma, and death. Sudden death due to cardiac arrhythmias has also been reported.

References.

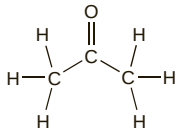
1. Proceedings of a meeting on substance abuse. *Hum Toxicol* 1989; **8:** 253–334.
2. Ashton CH. Solvent abuse. *BMJ* 1990; **300:** 135–6.

Acetone

Aceton; Acetona; Acetonas; Acétone; Acetonum; Asetoni; Dimethyl Ketone; Propanone; 2-Propanone.

Ацетон

C_3H_6O = 58.08.
CAS — 67-64-1.



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

Ph. Eur. 6.2 (Acetone). A volatile, clear, colourless liquid; the vapour is flammable. Miscible with water and with alcohol. Protect from light.

USNF 26 (Acetone). A transparent, colourless, mobile, volatile, very flammable liquid, having a characteristic odour. Sp. gr. not more than 0.789. Miscible with water, with alcohol, with chloroform, with ether, and with most volatile oils. A 50% solution in water is neutral to litmus. Store in airtight containers remote from fire.

Adverse Effects and Treatment

Inhalation of acetone vapour causes excitement followed by CNS depression with headache, restlessness, fatigue, and possibly convulsions, leading to coma and respiratory depression in severe cases. Vomiting and haematemesis may occur. There may be a latent period before the onset of symptoms of acetone poisoning. Similar symptoms may be seen after ingestion of acetone although hyperglycaemia has also been reported. The vapour is irritant to mucous membranes in high concentrations.

Acetone is commonly implicated in volatile substance abuse (see above).

Treatment of adverse effects consists of removal from exposure and general supportive and symptomatic measures; activated charcoal may be given if the patient presents within 1 hour of ingestion.

◊ For the possible effect of acetone on the metabolism of acetonitrile, see under Acetonitrile, below.

Pharmacokinetics

Acetone is absorbed through the lungs after inhalation. Some absorption occurs from the gastrointestinal tract. It is mostly excreted unchanged, predominantly through the lungs and also in the urine.

Uses

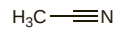
Acetone is widely used as an industrial, pharmaceutical, and domestic solvent; it is also used as an extraction solvent in food processing.

Acetonitrile

Acetonitrilo; Acetonitryl; Ethanenitrile; Methyl Cyanide.

Ацетонитрил

C_2H_3N = 41.05.
CAS — 75-05-8.



Description. Acetonitrile is a colourless liquid with an aromatic odour. Wt per mL about 0.79 g. B.p. about 81°. It emits highly toxic fumes of hydrogen cyanide when heated to decomposition or when reacted with acids or oxidising agents. Store in airtight containers.

Adverse Effects and Treatment

As for cyanides (see Hydrocyanic Acid, p.2045).

◊ Cyanide poisoning, including a fatality, has been reported[1,2] in a number of infants after ingestion of artificial nail removers containing acetonitrile. As acetonitrile is slowly metabolised to cyanide, serious toxic effects may not occur until several hours after ingestion and there is the danger that these products may be confused with acetone-based nail polish removers which are less toxic. In a report[3] of an adult who died after ingestion of acetonitrile, the onset of symptoms was delayed for 24 hours. It was considered that concomitant ingestion of acetone had slowed the metabolism of acetonitrile. In another case[4] vomiting, diarrhoea, convulsions, and reduced consciousness developed in a 35-year-old man 15 hours after occupational exposure to acetonitrile. Despite treatment for cyanide poisoning, acute renal failure and rhabdomyolysis subsequently developed.

1. Caravati EM, Litovitz TL. Pediatric cyanide intoxication and death from an acetonitrile-containing cosmetic. *JAMA* 1988; **260:** 3470–3.
2. Losek JD, *et al.* Cyanide poisoning from a cosmetic nail remover. *Pediatrics* 1991; **88:** 337–40.
3. Boggild MD, *et al.* Acetonitrile ingestion: delayed onset of cyanide poisoning due to concurrent ingestion of acetone. *Postgrad Med J* 1990; **66:** 40–1.
4. Muraki K, *et al.* Massive rhabdomyolysis and acute renal failure after acetonitrile exposure. *Intern Med* 2001; **40:** 936–9.

Pharmacokinetics

Acetonitrile is absorbed by inhalation, ingestion, and through the skin. It undergoes metabolism to cyanide, which is responsible for the toxicity of acetonitrile.

Uses

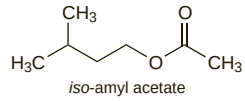
Acetonitrile is used as an industrial solvent. It may also be present in artificial nail removers.

Amyl Acetate

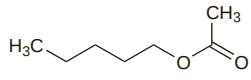
Acetato de amilo.

Амилацетат

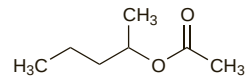
$C_7H_{14}O_2$ = 130.2.
CAS — 123-92-2 (iso-amyl acetate); 53496-15-4 (sec-amyl acetate); 628-63-7 (n-amyl acetate).



iso-amyl acetate



n-amyl acetate



sec-amyl acetate

Description. Amyl acetate is a mixture of isomers, principally *iso-*, *sec-*, and *n*-amyl acetate. *iso*-Amyl acetate is a clear colourless liquid with a sharp, fruity odour. Wt per mL about 0.87 g. B.p. about 140°. Slightly soluble in water; miscible with alcohol and with ether. Store in airtight containers.

Adverse Effects and Treatment

Prolonged exposure to amyl acetate may produce headache, fatigue, and depression of the CNS. Irritation of mucous membranes may also occur.

Treatment of adverse effects consists of removal from exposure and general supportive and symptomatic measures; activated charcoal may be given if the patient presents within 1 hour of ingestion.

Effects on the heart. A 27-year-old man developed headache, nausea, and vomiting after using a paint containing amyl acetate as the solvent in an unventilated room.[1] Some days later chest pain and dyspnoea developed; he was admitted to hospital 2 weeks after exposure with heart failure which slowly responded to treatment.

1. Weissberg PL, Green ID. Methyl-cellulose paint possibly causing heart failure. *BMJ* 1979; **ii:** 1113–14.

Uses

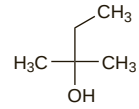
Amyl acetate is used as a pharmaceutical and industrial solvent.

Amylene Hydrate

Aethyldimethylmethanolum; Dimethylethyl Carbinol; Hidrato de amileno; Tertiary Amyl Alcohol. 2-Methylbutan-2-ol.

Амилгидрат

$C_5H_{12}O$ = 88.15.
CAS — 75-85-4.



Pharmacopoeias. In *USNF.*

USNF 26 (Amylene Hydrate). A clear, colourless liquid having a camphoraceous odour. Sp. gr. 0.803 to 0.807. Distilling range 97° to 103°. Freely soluble in water; miscible with alcohol, with chloroform, with ether, and with glycerol. Its solutions are neutral to litmus. Store in airtight containers.

Adverse Effects

Amylene hydrate is irritant and has a depressant effect on the CNS.

Uses

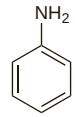
Amylene hydrate is used as a pharmaceutical solvent. It was formerly used as a hypnotic.

Aniline

Anilina; Phenylamine.

Анилин

C_6H_7N = 93.13.
CAS — 62-53-3.



Description. Aniline is a colourless or pale yellow oily liquid with a characteristic odour, readily darkening to brown on exposure to air and light. Wt per mL about 1.02 g. B.p. about 183°. Store in airtight containers. Protect from light.

Adverse Effects, Treatment, and Precautions

Inhalation, ingestion, or cutaneous absorption of aniline results in methaemoglobinaemia, with cyanosis, headache, weakness, stupor, convulsions, and coma. Irritation of the skin or mucous membranes, nausea and vomiting, and cardiac arrhythmias may occur. Haemolysis has been reported and may give rise to renal damage or jaundice. Death is usually a result of cardiovascular collapse.

Treatment may involve oxygen, methylthioninium chloride (p.1451), transfusions, or possibly haemodialysis. Gastric aspiration or activated charcoal may be considered in patients who present within 1 hour of ingestion.

Bladder papillomas have been reported in workers previously exposed to aniline. Commercial aniline may be contaminated with β-naphthylamine, a potential carcinogen.

Handling. Suitable precautions should be taken to avoid skin contact with aniline as it can penetrate skin and produce systemic toxicity.

Uses

Aniline is a solvent with wide industrial applications.