

properties. These additives include plasticisers added to reduce brittleness, ultraviolet-ray absorbers to prevent degradation by light, and antioxidants and lubricants which are sometimes needed for satisfactory processing. Monomer residues or additives can leach out from the finished plastic materials and have been the main causes of adverse effects. These may include haemolysis of blood cells, thrombosis, hypersensitivity reactions, precancerous changes, and local tissue necrosis. Silicone particles have been shed from dialysis tubing resulting in hypersplenism, pancytopenia, and occasionally in the production of a granulomatous hepatitis.

See also under Vinyl Chloride, p.2414, Methylmethacrylate, p.2343, and Polytef, below.

Pleurisy Root

Asclepia tuberosa; Butterfly Weed.

Profile

The root of *Asclepias tuberosa* (Asclepiadaceae) has traditionally been used for pleurisy and other respiratory-tract disorders.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Austral:** Broncafert; Verbasum Complex†; **UK:** Antibron; Chest Mixture; Horehound and Aniseed Cough Mixture; Vegetable Cough Remover.

Pokeroot

Fitolaca; Poke Root.

Pharmacopoeias. In *Chin*.

Profile

Pokeroot, the root of *Phytolacca decandra* (*P. americana*) (Phytolaccaceae) has emetic, purgative, anti-inflammatory, and anti-infective actions. It has been used for rheumatic and arthritic disorders, and for respiratory-tract infections, but is highly toxic in large doses and is not generally recommended. It has also been used externally for skin disorders.

The related species, *P. dodecandra*, is the source of the molluscicide endod (p.2042).

Homoeopathy. Pokeroot has been used in homoeopathic medicines under the following names: Phytolacca; Phytolacca americana; Phytolacca americana e baccis; Phytolacca e baccis; Phytoto.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Chile:** Homeoplasmina†; **Fr.:** Homeoplasmine; **UK:** Psorasolv.

Polacrilin Potassium (USAN, rINNM)

Kalii Polacrilinum; Polacrilina potásica; Polacriline Potassique; Polacrilinum Kalii.

Калия Полакрийлин

CAS — 54182-62-6 (polacrilin); 50602-21-6 (polacrilin).

Pharmacopoeias. In *USNF*.

USNF 26 (Polacrilin Potassium). The potassium salt of a unifunctional low-cross-linked carboxylic cation-exchange resin prepared from methacrylic acid and divinylbenzene. A white to off-white, free-flowing powder. Has a faint odour or is odourless. Insoluble in water and in most liquids.

Profile

Polacrilin potassium is used as a tablet and capsule disintegrant.

Poliglusam (USAN, rINN)

Chitosan; Poliglusumum.

Полиглузам

CAS — 9012-76-4.

Poliglusam Hydrochloride (rINNM)

Chitosan Hydrochloride; Chitosane, chlorhydrate de; Chitosanhydrochlorid; Chitosani hydrochloridum; Chitozono hydrochloridas; Hidrocloruro de poliglusam; Kitosaanihydrokloridi; Kitosanhydrokloridi; Kitozán-hidroklorid; Poliglusam, Chlorhydrate de; Poliglusami Hydrochloridum.

Полиглузама Гидрохлорид

Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Chitosan Hydrochloride). The chloride salt of an unbranched binary heteropolysaccharide consisting of the two units *N*-acetyl-D-glucosamine and D-glucosamine, obtained by partial deacetylation of chitin, normally leading to a degree of deacetylation of 70.0 to 95.0%. Chitin is extracted from the shells of shrimp and crab. A white or almost white fine powder. Sparingly soluble in water; practically insoluble in alcohol. A 1%

solution in water has a pH of 4.0 to 6.0. Store in airtight containers at a temperature of 2° to 8°. Protect from light.

Profile

Poliglusam is a polysaccharide composed of polymers of glucosamine and *N*-acetylglucosamine produced by partial deacetylation of chitin. It is manufactured commercially by chemical treatment of crustacean shells. Poliglusam is under investigation as a pharmaceutical excipient for formulations including oral dosage forms and gene carrier systems. It has been used as a dietary supplement in preparations for obesity and hypercholesterolaemia.

References

- Ylitalo R, *et al.* Cholesterol-lowering properties and safety of chitosan. *Arzneimittelforschung* 2002; **52**: 1–7.
- Jull AB, *et al.* Chitosan for overweight or obesity. Available in The Cochrane Database of Systematic Reviews; Issue 3. Chichester: John Wiley; 2008 (accessed 07/08/08).

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Chito-Lafamen; **Braz.:** Lipenan†; Magrix; **UK:** Bio Slim Silueta; Formoline LI 12.

Multi-ingredient: **Arg.:** ExoFatt†; Redualgas; **Braz.:** Control; **Indon.:** Betaslim; Combes; Kitoles; Vitaslim; **Malaysia:** Chitosan C†; **Port.:** Lipoabsorver†; Lipoforte†; Redusan Plus†; **Singapore:** Chitosano; Colenon.

Pollen and Pollen Extracts

Profile

Preparations containing pollen and pollen extracts from various sources have been used as nutritional supplements and in preparations for urological disorders. They are also used for allergen immunotherapy (p.2251).

◇ In common with other products derived from bees, products containing bee pollen may cause serious adverse reactions. Many plant pollens may contribute to bee pollen, including common allergens such as ragweed pollen. For reference to hypersensitivity reactions with bee products, including bee pollen, see under Royal Jelly, p.2382.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Cernilton; Polenat; **Austria:** Prostaflon; **Belg.:** Pollinex†; **Canad.:** Pollinex-R; **Cz.:** Grazax; Pollinex; **Fr.:** Pollergon; Prostal; Sodilen; Sthenorex†; **Ger.:** Cernilton; Depot-Hal; Pollinex Quattro; Pollinose S†; Purethal; TA Baume; TA Graser; TA MIX; **Hung.:** Pollstimol; **Jpn.:** Cernilton; **Neth.:** Allergopharma; Allergovit; Pollinex; Purethal; **Norw.:** Alutard; **Pol.:** Allergovit; Catalet; Perosal; Pollinex; **Port.:** Graza; **S.Afr.:** Allpyral Special Grass; **Switz.:** Adenoprostal†; ALK; Polvac; Prostaflon; Staloral; **UK:** Grazax; Pollinex.

Multi-ingredient: **Arg.:** Optimina Plus; PR21; **Braz.:** Multigen AL†; **Fr.:** Pollen Royal†; Propargile; **Ger.:** Pollstimol; Sublivac; **Ital.:** Api Baby; Apistress; Bio-200; Biotrefon Plus; Longevital; Neoplus; Ottovis; Pollingel; Pollingel con Ginkgo Biloba†; Pollingel Ginseng†; **Philipp.:** Jamieson Total Energy; Korgivit-E†; **UK:** Regina Royal Five.

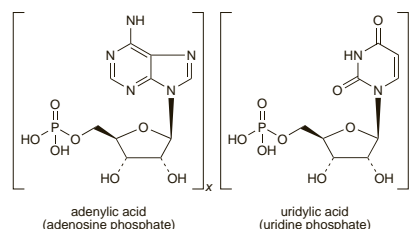
Poly A.poly U

Poli (A), poli (U); Polyadenylic-polyuridylic Acid.

Поли(А).поли(У)

(C₁₀H₁₄N₅O₇P)x.(C₉H₁₃N₂O₉P)x.

CAS — 24936-38-7.



Profile

Poly A.poly U is a double-stranded polyribonucleotide comprising polyadenylic and polyuridylic acids, and is believed to be an immunostimulant. It has been studied as an adjuvant in the management of operable solid tumours and in the management of hepatitis B. A complex of potassium polyriboadenylate-potassium polyribouridylylate is used in the treatment of viral eye infections.

Preparations

Proprietary Preparations (details are given in Part 3)

Rus.: Poludan (Полудан).

Poly I.poly C

Poli (I), poli (C); Polyinosinic-polycytidylic Acid.

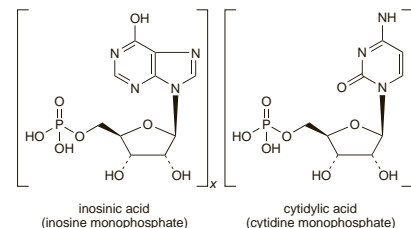
Поли(И).поли(Л)

(C₁₀H₁₃N₄O₈P)x.(C₉H₁₄N₃O₈P)x.

CAS — 24939-03-5.

ATC — L03AX07.

ATC Vet — QL03AX07.



Profile

Poly I.poly C is a synthetic double-stranded polyribonucleotide complex of equimolar concentrations of polyinosinic and polycytidylic acids, described as a mismatched double-strand RNA. Poly I.poly C and the complex of poly I.poly C stabilised with poly-L-lysine in carmellose [poly(ICLL)] have been found to induce the production of interferon and have been investigated in the treatment of malignant neoplasms and viral infections. In the form of poly I.poly C12U (p.902) it has been investigated for the treatment of AIDS, SARS, avian influenza, chronic fatigue syndrome, renal cell carcinoma, and invasive metastatic melanoma; poly(ICLL) has been investigated for the treatment of primary brain tumours.

Polysaccharide-K

Polisacárido-K; PSK; PS-K.

Полисахарид-К

Profile

Polysaccharide-K is a protein-bound polysaccharide isolated from a fungus, *Coriolus versicolor*. It is claimed to have immunostimulant and antineoplastic properties.

Preparations

Proprietary Preparations (details are given in Part 3)

Jpn.: Krestin.

Polytef (USAN)

Politef (pINN); Politefo; Politefum; PTFE. Poly(tetrafluoroethylene).

Политеф

(C₂F₄)_n.

CAS — 9002-84-0.

Profile

Polytef has numerous industrial applications. As 'Teflon' it is used on 'non-stick' cooking utensils.

A paste of polytef has been used for a variety of purposes including the treatment of aphonia, for replacement grafts in vascular surgery, and in the correction of some forms of urinary incontinence (p.2180). The main concern with these procedures is migration of polytef particles. It has also been applied to the skin as a barrier paste with perfluoroalkylpolyether to reduce exposure to chemical warfare agents.

Adverse effects. Brain injury in a child was possibly associated with migration of polytef particles from a periureteral injection performed 1 year earlier.¹ Three cases of polytef adenopathy and one case of giant granuloma have been reported² in children who had previously undergone subureteral polytef injection for the treatment of vesicoureteral reflux.

- Borgatti R, *et al.* Brain injury in a healthy child one year after periureteral injection of Teflon. *Pediatrics* 1996; **98**: 290–1.
- Aragona F, *et al.* Polytetrafluoroethylene giant granuloma and adenopathy: long-term complications following subureteral polytetrafluoroethylene injection for the treatment of vesicoureteral reflux in children. *J Urol (Baltimore)* 1997; **158**: 1539–42.

Uses. References

- Polley JW, *et al.* The use of Teflon in orbital floor reconstruction following blunt facial trauma: a 20-year experience. *Plast Reconstr Surg* 1987; **79**: 39–43.
- Puri P. Endoscopic correction of primary vesicoureteric reflux by subureteric injection of polytetrafluoroethylene. *Lancet* 1990; **335**: 1320–2.
- Maskell R, *et al.* Correction of vesicoureteric reflux by endoscopic injection. *Lancet* 1991; **338**: 1460–1.
- Anonymous. Use of Teflon preparations for urinary incontinence and vesicoureteral reflux. *JAMA* 1993; **269**: 2975–80.
- Duckett JRA. The use of periurethral injectables in the treatment of genuine stress incontinence. *Br J Obstet Gynaecol* 1998; **105**: 390–6.
- Su TH, *et al.* Injection therapy for stress incontinence in women. *Int Urogynecol J* 1999; **10**: 200–6.

- Chaffange P, *et al.* Traitement endoscopique du reflux vésico-rénal chez l'enfant: résultats à court et à long terme des injections de polytétrafluoroéthylène (Téflon). *Prog Urol* 2001; **11**: 546–51.
- Meschia M, *et al.* Injection therapy for the treatment of stress urinary incontinence in women. *Gynecol Obstet Invest* 2002; **54**: 67–72.
- Huber TS, *et al.* Patency of autogenous and polytetrafluoroethylene upper extremity arteriovenous hemodialysis accesses: a systematic review. *J Vasc Surg* 2003; **38**: 1005–11.
- Klinkert P, *et al.* Saphenous vein versus PTFE for above-knee femoropopliteal bypass: a review of the literature. *Eur J Vasc Endovasc Surg* 2004; **27**: 357–62.

Poplar Buds

Álamo, brotes de; Balm of Gilead Buds.

Pharmacopoeias. *Pol.* includes the leaves from *Populus nigra* *gr.*

Profile

The buds of various species of *Populus*, including *P. nigra*, *P. candicans*, *P. gileadensis*, and *P. tacamahacca* (*P. balsamifera*), have been used for the analgesic effect of their salicin content, as well as in preparations for a variety of other disorders. They also contain volatile oil, resin, and other substances. The resin from poplar buds is one of the major sources of propolis (p.2373).

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: *Austral.*: Phytodolor; Valerian†; *Austria*: Phytodolor; Prostagutt; *Braz.*: Eviprost†; *Canad.*: Bronchial Cough; Mielocol; Wampole Bronchial Cough Syrup†; *Cz.*: Homeovox; Phytodolor; *Ger.*: Eviprost N; Phytodolor; Prostamed; *Indon.*: Eviprost; *Jpn.*: Eviprost; *Port.*: Prostamed†; *Singapore*: Eviprost; *Switz.*: Phytomed Prosta†; *UK*: Balm of Gilead; Gerard House Reumalex; Peerless Composition Essence; Tabrits.

Poppy-seed Oil

Adormidera, aceite de semilla de; Huile d'Oeillette; Maw Oil; Oleum Papaveris; Oleum Papaveris Seminis.

Profile

Poppy-seed oil is the fixed oil expressed from the ripe seeds of the opium poppy, *Papaver somniferum* (Papaveraceae). It is used as a substitute for olive oil for culinary and pharmaceutical purposes. It is also used in the preparation of Iodised Oil Fluid Injection (BP 2008). Commercial grades are used in making soaps, paints, and varnishes.

Preparations

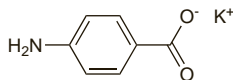
Proprietary Preparations (details are given in Part 3)

Multi-ingredient: *Switz.*: GU Eau†; Olbas.

Potassium Aminobenzoate

Aminobenzoate Potassium; Aminobenzoato potásico. Potassium 4-aminobenzoate.

$C_7H_6KNO_2 = 175.2$.
CAS — 138-84-1.



Pharmacopoeias. In *US*.

USP 31 (Aminobenzoate Potassium). A white crystalline powder. Very soluble in water; soluble in alcohol; practically insoluble in ether. A 1% solution in water has a pH of about 7, while a 5% solution has a pH of 8.0 to 9.0.

Adverse Effects and Precautions

Anorexia, nausea, fever, and skin rash have been reported.

Potassium aminobenzoate should be given with caution to patients with renal impairment. Licensed product information recommends that treatment should be interrupted during periods of fasting, anorexia, or low food intake, to avoid the possible development of hypoglycaemia.

Interactions

Potassium aminobenzoate can inactivate sulfonamides.

Uses and Administration

Potassium aminobenzoate has been used in the treatment of various disorders associated with excessive fibrosis, such as scleroderma (p.1817) and Peyronie's disease, in usual doses of 12 g daily by mouth in 4 to 6 divided doses.

Peyronie's disease. Variable results have been reported with potassium aminobenzoate in the treatment of Peyronie's disease,¹⁻³ but evidence from well controlled trials is lacking. It has

been suggested that a successful response is more likely if treatment is started in the acute stage.²

- Gingell JC, Desai KM. Peyronie's disease. *BMJ* 1988; **298**: 1489–90.
- Mohanty KC, Strachan RG. Peyronie's disease. *BMJ* 1989; **298**: 254.
- Carson CC. Potassium para-aminobenzoate for the treatment of Peyronie's disease: is it effective? *Tech Urol* 1997; **3**: 135–9.

Preparations

USP 31: Aminobenzoate Potassium Capsules; Aminobenzoate Potassium for Oral Solution; Aminobenzoate Potassium Tablets.

Proprietary Preparations (details are given in Part 3)

Austria: Potaba; *Canad.*: Potaba; *Ger.*: Potaba; *Gr.*: Potaba; *UK*: Potaba; *USA*: Potaba.

Potassium Borotartrate

Borotartrato potásico; Potassium Sodium Borotartrate; Soluble Cream of Tartar.

CAS — 12001-68-2.

Profile

Potassium borotartrate is reported to have similar properties to those of bromides (p.2269). It has been used in nervous disorders and has been used in photography as a retarder for alkaline developers. Chronic boron poisoning (see under Boric Acid, p.2268) has been reported following the use of potassium borotartrate internally.

Potassium Bromate

924; Bromato potásico; Potasu bromian.

$KBrO_3 = 167.0$.

CAS — 7758-01-2.



Adverse Effects

Nausea, vomiting, severe abdominal pains, diarrhoea, and lethargy are common after ingestion of potassium bromate. Acute renal failure arising from tubular necrosis usually presents with oliguria or anuria within 1 to 3 days of significant ingestion, and is the most frequent cause of death. Ototoxicity may present as tinnitus or hearing loss within hours of ingestion, and can progress to sensorineural deafness in some patients. Ototoxicity and nephrotoxicity may be irreversible.

Potassium bromate poisoning can also produce hypotension, myocarditis, hepatitis, and encephalopathy characterised by agitation, delirium, convulsions, and coma. Microangiopathic anaemia has also been reported.

Potassium bromate is carcinogenic in *animals*.

Acute toxicity. Reports of bromate poisoning.

- Lue JN, *et al.* Bromate poisoning from ingestion of professional hair-care neutralizer. *Clin Pharm* 1988; **7**: 66–70.
- Lichtenberg R, *et al.* Bromate poisoning. *J Pediatr* 1989; **114**: 891–4.
- De Vriese A, *et al.* Severe acute renal failure due to bromate intoxication: report of a case and discussion of management guidelines based on a review of the literature. *Nephrol Dial Transplant* 1997; **12**: 204–9.

Treatment of Adverse Effects

Gastric lavage should be considered if the patient presents within 1 hour of acute ingestion of potassium bromate; use of a 2 to 5% solution of sodium bicarbonate has been suggested to reduce bromate absorption and prevent hydrobromic acid production. Activated charcoal has also been recommended as an adsorbent. Attention to the patient's fluid, acid-base, and electrolyte status is important, particularly in the presence of acute renal failure. An intravenous infusion of 100 to 500 mL of a 1% sodium thiosulfate solution has sometimes been given. Oxygen may be indicated. The prompt use of haemodialysis or peritoneal dialysis has been suggested.

Thiosulfate. Although the use of intravenous sodium thiosulfate is an accepted practice in the treatment of bromate poisoning, convincing evidence that it reduces bromate to bromide is lacking.^{1,2} Oral sodium thiosulfate solutions have also been used but are no longer recommended because hydrogen sulfide, itself a powerful irritant and toxic agent, may be evolved in the presence of hydrochloric acid.²

- McElwee NE, Kearney TE. Sodium thiosulfate unproven as bromate antidote. *Clin Pharm* 1988; **7**: 570–2.
- De Vriese A, *et al.* Severe acute renal failure due to bromate intoxication: report of a case and discussion of management guidelines based on a review of the literature. *Nephrol Dial Transplant* 1997; **12**: 204–9.

Uses

Potassium bromate is an oxidising agent. It has no therapeutic uses but it has been widely used as the 'neutraliser' of thioglycol-

late hair-waving lotions. It has been used in the preparation of barley malt for beer. It has also been used as a flour-maturing agent but such use is no longer considered appropriate and is prohibited in some countries.

Food additive. Potassium bromate is a genotoxic carcinogen and should not be present in foods when consumed. Its use for the treatment of flour for bread-making is not appropriate.¹

- FAO/WHO. Evaluation of certain food additives and contaminants: forty-fourth report of the joint FAO/WHO expert committee on food additives. *WHO Tech Rep Ser* 859 1995. Also available at: http://whqlibdoc.who.int/trs/WHO_TRS_859.pdf (accessed 18/07/08)

Potassium Chlorate

Clorato potásico; Kalium Chloricum; Potassii Chloras; Potasu chloran.

$KClO_3 = 122.5$.

CAS — 3811-04-9.

Handling and storage. Potassium chlorate is unstable and, in contact with organic or readily oxidisable substances such as charcoal, phosphorus, or sulfur it is liable to explode especially if heated or subjected to friction or percussion. It should not be allowed to come into contact with matches or surfaces containing phosphorus compounds. Reasonable steps should be taken before supplying potassium chlorate to ensure that it will not be used for the illicit preparation of explosives or fireworks.

Profile

Potassium chlorate has been used as an astringent, usually as a mouthwash or gargle. Concentrated solutions are irritant.

Acute poisoning from ingestion requires prompt symptomatic treatment. Symptoms include nausea, vomiting, diarrhoea, abdominal pain, haemolytic anaemia, haemorrhage, methaemoglobinemia, hyperkalaemia, and renal failure. There may be liver damage and central effects with convulsions and coma.

Gastric lavage should be considered within 1 hour of ingestion of potassium chlorate; activated charcoal is also recommended by some. If methaemoglobinemia is severe, patients may require exchange transfusion with whole blood. Several authorities consider that methylthionium chloride should be given intravenously if methaemoglobinemia is greater than 50%, although some have advised against such use for fear of converting chlorate to the more toxic hypochlorite.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: *Canad.*: Fletchers Sore Mouth Medicine; *Spain*: Edifaringen; Faringenilo; Solurinol.

Potassium Hydroxide

Ätzkali; Caustic Potash; E525; Hidróxido potásico; Hydroxid draselný; Kalii hydroxidum; Kalii Hydroxydum; Kalio hidroksidas; Kalium Hydroxydatum; Kálium-hidroxid; Kaliumhidroksidi; Kaliumhydroxid; Potash Ly; Potassium, hydroxyde de; Potasu wodorotlenek.

$KOH = 56.11$.

CAS — 1310-58-3.

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

Ph. Eur. 6.2 (Potassium Hydroxide). White or almost white, crystalline, hard masses, supplied as sticks, pellets, or irregularly shaped pieces; it is deliquescent in air, hygroscopic, and absorbs carbon dioxide. Very soluble in water; freely soluble in alcohol. Store in airtight, nonmetallic containers.

USNF 26 (Potassium Hydroxide). It contains not less than 85% of total alkali, calculated as KOH, including not more than 3.5% of K_2CO_3 . White or practically white, fused masses, or small pellets, or flakes, or sticks, or other forms. It is hard and brittle and shows a crystalline fracture. Exposed to air, it rapidly absorbs carbon dioxide and moisture, and deliquesces. Soluble 1 in 1 of water, 1 in 3 of alcohol, and 1 in 2.5 of glycerol; very soluble in boiling alcohol. Store in airtight containers.

Adverse Effects and Treatment

As for Sodium Hydroxide, p.2390.

Uses and Administration

Potassium hydroxide is a powerful caustic that has been used to remove warts. A 2.5% solution in glycerol has been used as a cuticle solvent. An escharotic preparation of potassium hydroxide and calcium hydroxide was known as Vienna paste. Potassium hydroxide is used to adjust the pH of solutions in pharmaceutical formulations.

Preparations

BP 2008: Chloroxylenol Solution; Potassium Hydroxide Solution.

Proprietary Preparations (details are given in Part 3)

Spain: Cerumenol.

Multi-ingredient: *Austria*: Leberinfusion; *Ger.*: Acarex†; Glutarsin E†; Kalium-Magnesium-Asparaginat†; Sekudrill†; *Ital.*: Sekudrill.

The symbol † denotes a preparation no longer actively marketed