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- Huber TS, *et al.* Patency of autogenous and polytetrafluoroethylene upper extremity arteriovenous hemodialysis accesses: a systematic review. *J Vasc Surg* 2003; **38**: 1005–11.
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## 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)

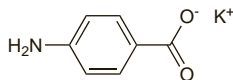
**Multi-ingredient:** *Switz.*: GU Eau†; Olbas.

## 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,<sup>1-3</sup> 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.<sup>2</sup>

- 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.<sup>1,2</sup> 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.<sup>2</sup>

- 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.<sup>1</sup>

- 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](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 methylthioninium 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; Solurminol.

## 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