

insoluble in alcohol.

USNF 26 (Calcium Sulfate). It is anhydrous or contains two molecules of water of hydration. A white to slightly yellow-white odourless fine powder. Soluble 1 in 375 of water and 1 in 485 of boiling water; soluble in 3N hydrochloric acid.

Profile

Calcium sulfate dihydrate is used as an excipient for the preparation of tablets or capsules.

Homoeopathy. Calcium sulfate has been used in homoeopathic medicines under the following names: Calcium sulfuricum; Calcareo sulphurica; Cal. sul.

Preparations

Proprietary Preparations (details are given in Part 3)

Austral.: Celloids CS 36.

Dried Calcium Sulfate

Calcii Sulfas Hemihydricus; Calcined Gypsum; Calcium Sulfuricum ad Usum Chirurgicum; Calcium Sulphuricum Ustum; Dried Calcium Sulphate; Exsiccated Calcium Sulphate; Gebrannter Gips; Gëssso; Gypsum Siccatum; Plaster of Paris; Plâtre Cuit; Siran vápenatý hemihydrát; Sulfato cálcico anhidro; Sulphate of Lime; Yeso Blanco.

$\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} = 145.1$.

CAS — 10034-76-1 (calcium sulfate hemihydrate); 26499-65-0 (calcium sulfate hemihydrate).

Pharmacopoeias. In *Br., Chin., Ger., Jpn, Pol., and Viet.*

BP 2008 (Dried Calcium Sulphate). A white or almost white, odourless or almost odourless hygroscopic powder. It may contain suitable setting accelerators or decelerators. Slightly soluble in water; more soluble in dilute mineral acids; practically insoluble in alcohol.

The BP gives Exsiccated Calcium Sulphate and Plaster of Paris as approved synonyms.

Profile

Dried calcium sulfate is used for the preparation of Plaster of Paris Bandage, which is used for the immobilisation of limbs and fractures. It is also employed for making dental casts and has been used as a bone graft substitute.

Preparations

Proprietary Preparations (details are given in Part 3)

Fr.: Biplatrix.

Calendula

Caléndula; Calendulae Anthodium; Calendulae flos; Rhinal-bloom; Keňákukka; Körömvirág; Koszyzek nagietka; Marigold; Marybud; Medetky žedai; Měsíčkový květ; Pot Marigold; Ringblomma; Souci.

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

Ph. Eur. 6.2 (Calendula Flower). It consists of the whole or cut, dried, and fully opened flowers which have been detached from the receptacle of the cultivated, double-flowered varieties of *Calendula officinalis*. It contains not less than 0.4% of flavonoids, calculated as hyperoside ($\text{C}_{21}\text{H}_{30}\text{O}_{12} = 464.4$) calculated with reference to the dried drug. Protect from light.

Profile

Calendula has antiseptic, anti-inflammatory, and astringent properties. It is used in external preparations for minor skin disorders, and also internally for gastrointestinal and menstrual disorders. Calendula is also included in numerous herbal preparations to improve their appearance.

Calendula oil is also used.

Homoeopathy. Calendula has been used in homoeopathic medicines under the following names: Calendula officinalis; Calend.

Preparations

Proprietary Preparations (details are given in Part 3)

Cz.: Calendumed†; Dr Theiss Ringelblumen Salbe; Gallentee†; Mesickovy; **Fr.:** Calendulene; **Mex.:** Cicadin; **Pol.:** Calendulin; **UK:** Calendolon.

Multi-ingredient: **Arg.:** Acnetrol; Banofal†; Brunavera; Bushi; Controlacne; Eurocolor Post Solar; Europrotec Post Solar†; Lavandula Oligoplex; Odontobiotic†; **Austral.:** Eczema Relief; Galium Complex†; Nappy Rash Relief Cream; Skin Healing Cream†; **Austria:** The Chambard-Tee; **Braz.:** Calendula Concret†; Malvatricin Natural; **Chile:** Homeoplasmin†; Matikom; **Cz.:** Abfuhr-Heilkräutertee†; Blahungstee N†; Blasen- und Nieren-tee†; Cicaderma; Epilobin; Hertz- und Kreislauftee†; Homeovox; **Fr.:** Alkagin; Cicaderma; Cicatridine; Dioptec; Eryange†; Hemorrologel; Homeoplasmine; **Ger.:** Befelka-Oel; bioplant-Kamillenfluid†; Cefawell†; Ne-phronorm med†; Unguentum lymphaticum; **Hong Kong:** Calmiderm; Pregnacare; **Ital.:** Alkagin; Allerlux; Babygella; Decon Ovuli; Lenirose†; Nevril; Proctopure; **Malaysia:** Arnica Comp†; Natberry Extra; **Mex.:** Sanic; Suaven; Supranettes Natural†; **Philipp.:** Lactaderm; **Pol.:** Arcalen; Azucalen; Dyspepsin; Escalar; Mucosit; Reumosol; Sanofil; **Port.:** Alkagin; Cicaderma; **S.Afr.:** Arnica Massage Oil; Heilsalbe; Oleum Rhinale Nasal Oil; Weccesin; **Spain:** Banofal; Menstrun†; **Switz.:** Gel a la consoude; Keppur; Kytta Gel†; Onguent aux herbes Keller; Urinex; Wala Echinnacea; Weccesin†; Ziegella; **UK:** Calendula Nappy Change Cream; Eucanol; Massage Balm with Calendula; **USA:** Nasal-Ease; **Venez.:** Andantol Jalea; Biomicovo†; Flucirac; Gelsem; Linfoderm; Supranettes†.

Calumba

Calumba Root; Colombo.

Pharmacopoeias. In *Jpn.*

Profile

Calumba, the dried root of *Jateorhiza palmata* (*J. columba*) (Menispermaceae), has been used as a bitter and as a flavour.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Switz.:** Padma-Lax; Padmed Laxan; **UK:** Appetiser Mixture; Fegina.

Camostat Mesilate (pINN)

Camostat, Mésilate de; Camostat Mesylate; Camostati Mesilas; FOY305; Mesilato de camostat. *N,N*-Dimethylcarbamoylmethyl 4-(4-guanidinobenzoxyloxy)phenylacetate methanesulphonate.

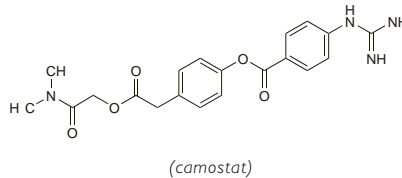
Камостат Мезилат

$\text{C}_{20}\text{H}_{22}\text{N}_4\text{O}_5 \cdot \text{CH}_4\text{O}_3\text{S} = 494.5$.

CAS — 59721-28-7 (camostat); 59721-29-8 (camostat mesilate).

ATC — B02AB04.

ATC Vet — QB02AB04.



Pharmacopoeias. In *Jpn.*

Profile

Camostat mesilate is a proteolytic enzyme inhibitor that has been given orally for the treatment of postoperative reflux oesophagitis (p.1696) in a dose of 100 mg 3 times daily, and for remission of the acute symptoms of chronic pancreatitis (p.2361) in a dose of 200 mg 3 times daily.

Preparations

Proprietary Preparations (details are given in Part 3)

Jpn: Foipan.

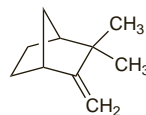
Camphene

Kamfen. 2,2-Dimethyl-3-methylenebicyclo[2.2.1]heptane.

Камфен

$\text{C}_{10}\text{H}_{16} = 136.2$.

CAS — 79-92-5.



Profile

Camphene is a constituent of several essential oils. It has antiseptic and antispasmodic actions and is included in preparations for the treatment of biliary- and urinary-tract disorders.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Austria:** Rowachol; Rowatinox; **Braz.:** Quelodint†; **Chile:** Rowatinox; **Cz.:** Rowachol; Rowatinox; **Ger.:** Rowachol; Rowachol comp†; Rowachol-Digestiv; Rowatinox; **Hong Kong:** Neo-Rowachol; Neo-Rowatinox; Rowachol; Rowatinox; **Hung.:** Rowachol; Rowatinox; **Irl.:** Rowachol; Rowatinox; **Israel:** Rowachol; Rowatinox; **Malaysia:** Rowachol; Rowatinox; **Mex.:** Cholex; **Philipp.:** Rowachol; Rowatinox; **Pol.:** Rowachol; Rowatinox; Terpichol; **Spain:** Rowachol; Rowanefrin; **Switz.:** Rowachol; **Thai.:** Rowachol; Rowatinox; **UK:** Rowachol; **Venez.:** Rowachol; Rowatinox.

Camphor

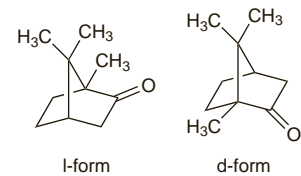
Alcanfor; 2-Camphanone; D-Camphor (natural); Camphora; Camphora D; Camphre; Camphre Droit (natural); Camphre du Japon (natural); Cãnfora; D-Kafir; Kafir; Kamfer; Kamferi; Kãmför; Kamfora; Kamparas. Boman-2-one; 1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one.

$\text{C}_{10}\text{H}_{16}\text{O} = 152.2$.

CAS — 76-22-2 (\pm camphor); 21368-68-3 (\pm camphor); 464-49-3 (+ camphor); 464-48-2 (– camphor).

ATC — C01EB02.

ATC Vet — QC01EB02.



Pharmacopoeias. In *Chin., Eur.* (see p.vii), *Jpn, US, and Viet.;* some only describe natural camphor and some only synthetic camphor; *Eur.* and *Jpn* have separate monographs for natural and racemic or synthetic camphor.

Ph. Eur. 6.2 (Camphor; Racemic). A white or almost white, crystalline powder or friable crystalline masses, highly volatile even at room temperature. Slightly soluble in water; very soluble in alcohol and in petroleum spirit; very slightly soluble in glycerol; freely soluble in fatty oils.

Ph. Eur. 6.2 (D-Camphor; Natural Camphor BP 2008). A white or almost white, crystalline powder or friable crystalline masses, highly volatile even at room temperature. Slightly soluble in water; very soluble in alcohol and in petroleum spirit; very slightly soluble in glycerol; freely soluble in fatty oils.

USP 31 (Camphor). A ketone obtained from *Cinnamomum camphora* (Lauraceae) or produced synthetically. The natural product is dextrorotatory and the synthetic product is optically inactive.

Colourless or white crystals, granules, or crystalline masses, or colourless to white, translucent, tough masses with a penetrating characteristic odour. It slowly volatilises at ordinary temperatures.

Soluble 1 in 800 of water, 1 in 1 of alcohol, 1 in 0.5 of chloroform, and 1 in 1 of ether; freely soluble in carbon disulfide, in petroleum spirit, and in fixed and volatile oils. Store at a temperature not exceeding 40° in airtight containers.

Compounding. A liquid or soft mass is formed when camphor is triturated with cloral hydrate, menthol, phenol, and many other substances. Camphor is readily powdered by triturating with a few drops of alcohol, ether, or chloroform.

Adverse Effects

In addition to accidental ingestion of preparations containing camphor, poisoning has also occurred after giving camphorated oil (camphor liniment) to children in mistake for castor oil. The symptoms include nausea, vomiting, epigastric pain, headache, dizziness, oropharyngeal burning, delirium, muscle twitching, epileptiform convulsions, depression of the CNS, and coma. Breathing is difficult and the breath has a characteristic odour; anuria may occur. Death from respiratory failure or status epilepticus may occur; fatalities in children have been recorded from 1 g. There have been reports of instant collapse in infants following the local application of camphor to their nostrils.

Treatment of Adverse Effects

Supportive care, including anticonvulsant therapy, is the mainstay of treatment of camphor intoxication. Gastric lavage may be considered if the patient presents within 1 hour of ingestion; any convulsions must be controlled first. Activated charcoal may be given orally. Haemodialysis with a lipid dialysate or haemoperfusion have been tried but are of doubtful value.

Precautions

Camphor should not be applied to the nostrils of infants even in small quantities, as this may cause immediate collapse.

◊ The UK Committee on the Review of Medicines¹ recommended that camphor should not be included in products intended for the treatment of hepatic and biliary disorders, gallstones, colic, renal disorders, urinary-tract infections, or ureteral stones. The use of camphor parenterally or as irrigants was considered undesirable due to the associated safety hazard.

1. Anonymous. Camphorated oil: licensing authority takes action on camphor products. *Pharm J* 1984; 232: 792.

Pharmacokinetics

Camphor is readily absorbed from all administration sites. It is hydroxylated in the liver to yield hydroxycamphor metabolites which are then conjugated with glucuronic acid and excreted in the urine. Camphor crosses the placenta.

◊ For reference to a study on the dermal absorption of camphor, menthol, and methyl salicylate, see Menthol, p.2340.

Uses and Administration

Applied externally, camphor acts as a rubefacient and mild analgesic (see p.5) and is used in liniments as a counter-irritant in fibrositis, neuralgia, and similar conditions. It is also an ingredient of many inhaled nasal decongestant preparations but it is of doubtful efficacy. The use of camphor liniment (camphorated oil) is discouraged because of its potential toxicity. It has been withdrawn from the market in both the UK and the USA. In the USA the concentration of camphor in preparations for external use may not exceed 11%.

Camphor oil is occasionally used in aromatherapy.