

**Homoeopathy.** Chamomile has been used in homoeopathic medicines under the following names: Chamomilla; Cham.

◇ Reviews.

- Berry M. The chamomiles. *Pharm J* 1995; **254**: 191–3.

**Hypersensitivity.** References.

- Van Ketel WG. Allergy to Matricaria chamomilla. *Contact Dermatitis* 1987; **16**: 50–1.
- McGeorge BC, Steele MC. Allergic contact dermatitis of the nipple from Roman chamomile ointment. *Contact Dermatitis* 1991; **24**: 139–40.
- Rodríguez-Serna M, et al. Allergic and systemic contact dermatitis from Matricaria chamomilla tea. *Contact Dermatitis* 1998; **39**: 192–3.
- Jensen-Jarolim E, et al. Fatal outcome of anaphylaxis to camomile-containing enema during labor: a case study. *J Allergy Clin Immunol* 1998; **102**: 1041–2.
- Giordano-Labadie F, et al. Allergic contact dermatitis from chamomile used in phytotherapy. *Contact Dermatitis* 2000; **42**: 247.
- Foti C, et al. Contact urticaria from Matricaria chamomilla. *Contact Dermatitis* 2000; **42**: 360–1.
- de la Torre Morán F, et al. Clinical cross-reactivity between Artemisia vulgaris and Matricaria chamomilla (chamomile). *J Invest Allergol Clin Immunol* 2001; **11**: 118–22.
- Paulsen E, et al. Cosmetics and herbal remedies with Compositae plant extracts — are they tolerated by Compositae-allergic patients? *Contact Dermatitis* 2008; **58**: 15–23.

**Preparations**

**Ph. Eur.:** Matricaria Liquid Extract.

**Proprietary Preparations** (details are given in Part 3)

**Austria:** Kamillosan; **Belg.:** Babygencal; Kamillosan; **Braz.:** Ad-Muc; Kamillosan; **Chile:** Kamillosan†; **Cz.:** APS Balneum†; Hermandkovy; Kamillosan; Rumanecel Pravy†; **Fr.:** Cefamig; **Ger.:** Azulon; Chamo S†; Eukamillat†; Galenat Kamill N†; Kamillan supra; Kamille N†; Kamille†; Kamillen-Bad N R†; Kamille†; Kamillanbad Intradermig; Kamillencreme N†; Kamillencxtract†; Kamillin; Kamillodermig; Kamillolpur; Kamillosan; Marklak†; Matmilie; PC 30 N; Soledum med†; **Hong Kong:** Camodermig; **India:** Kamillosan; **Indon.:** Kamillosan; **Ital.:** Ceru Spray; Milla; **Mex.:** Balsamo Nordin; Kamillosan; **NZ:** Kamillosan†; **Pol.:** Azulan; Azuseptol; **Port.:** Kamillosan; **Rus.:** Romasulan (Помазула); **S.Afr.:** Ashton & Parsons Infants Powders; **Singapore:** Camodermig†; **Switz.:** Kamillen-Bad†; Kamillex; Kamillin Medipharm; Kamillifluid; Kamillosan; **UK:** Ashton & Parsons Infants Powders; Kamillosan; **Venez.:** Kamillen.

**Multi-ingredient:** numerous preparations are listed in Part 3.

## Chaparral

**Profile**

Chaparral is derived from the creosote bush, *Larrea tridentata* (Zygophyllaceae). It has been included in various herbal preparations but such use has been associated with severe hepatotoxicity. Recommendations that products containing chaparral should not be consumed have been made in several countries. Masoprocol (p.742) is an antineoplastic isolated from the creosote bush.

**Hepatotoxicity.** References.

- Gordon DW, et al. Chaparral ingestion: the broadening spectrum of liver injury caused by herbal medications. *JAMA* 1995; **273**: 489–90.
- Batchelor WB, et al. Chaparral-induced hepatic injury. *Am J Gastroenterol* 1995; **90**: 831–3.
- Sheikh NM, et al. Chaparral-associated hepatotoxicity. *Arch Intern Med* 1997; **157**: 913–19.
- Kauma H, et al. Toxic acute hepatitis and hepatic fibrosis after consumption of chaparral tablets. *Scand J Gastroenterol* 2004; **39**: 1168–71.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Austral.:** Proyeast†.

## Chenodeoxycholic Acid (BAN, rINN)

Acide chénoésoxycholique; Ácido quenodeoxicólico; Acidum chenodeoxycholicum; CDCA; Chenic Acid; Chenodeoksicholol rüsgstis; Chenodioli (USAN); Kenodeoksikolik Asit; Kenodeoksikoolihappo; Kenodeoksicholsyra; Kenodezoxikólsav; Kyselina chenodeoxycholová. 3 $\alpha$ ,7 $\alpha$ -Dihydroxy-5 $\beta$ -cholan-24-oic acid.

Хенодезоксихолевая Кислота

C<sub>24</sub>H<sub>40</sub>O<sub>4</sub> = 392.6.

CAS — 474-25-9.

ATC — A05AA01.

ATC Vet — QA05AA01.

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

**Ph. Eur. 6.2** (Chenodeoxycholic Acid). A white or almost white powder. Very slightly soluble in water; freely soluble in alcohol; soluble in acetone; slightly soluble in dichloromethane.

**Adverse Effects and Precautions**

As for Ursodeoxycholic Acid, p.2408. Diarrhoea may occur more frequently than with ursodeoxycholic acid. A transient rise in liver-function test values and hypercholesterolaemia (low-density lipoprotein) have been reported with chenodeoxycholic acid.

Chenodeoxycholic acid is embryotoxic in some animals.

**Interactions**

As for Ursodeoxycholic Acid, p.2408.

## Pharmacokinetics

Chenodeoxycholic acid is absorbed from the gastrointestinal tract and undergoes first-pass metabolism and enterohepatic recycling. It is partly conjugated in the liver before being excreted into the bile and, under the influence of intestinal bacteria, the free and conjugated forms undergo 7 $\alpha$ -dehydroxylation to lithocholic acid. Some lithocholic acid is excreted directly in the faeces and the rest absorbed, mainly to be conjugated and sulfated by the liver before excretion in the faeces. Chenodeoxycholic acid also undergoes epimerisation to ursodeoxycholic acid.

◇ References.

- Crosignani A, et al. Clinical pharmacokinetics of therapeutic bile acids. *Clin Pharmacokinet* 1996; **30**: 333–58.

## Uses and Administration

Chenodeoxycholic acid is a naturally occurring bile acid (p.2266). When given orally it reduces hepatic synthesis of cholesterol and provides additional bile salts to the pool available for solubilisation of cholesterol and lipids. It has been used for the dissolution of cholesterol-rich gallstones (p.2409) in patients with a functioning gallbladder, in usual doses of about 15 mg/kg daily. The daily dose may be divided unequally and the larger dose given before bedtime to counteract the increase in biliary cholesterol concentrations seen overnight. Treatment may need to be given for up to 2 years, depending on the size of the stone. It should be continued for about 3 months after radiological disappearance of the stones. Chenodeoxycholic acid is also used in reduced doses with ursodeoxycholic acid.

Chenodeoxycholic acid has been used as a dietary supplement in neonates and children with inborn errors of bile acid synthesis: it has been used in the treatment of cerebrotendinous xanthomatosis; with cholesterol in the Smith-Lemli-Opitz syndrome; and with cholic acid for bile acid synthesis defects.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Austria:** Chenofalk†; **Belg.:** Chenofalk†; **Ger.:** Chenofalk; **Hong Kong:** Chenofalk†; **Hung.:** Chenofalk†; **Indon.:** Chenofalk; **Israel:** Chenofalk; **Soluston†;** **Mex.:** Chenofalk†; **Sulobit†;** **Neth.:** Chenofalk; **Port.:** Cebil†; **Xe-by†;** **Spain:** Quenobilan; Quenocol†; **Turk.:** Chenofalk.

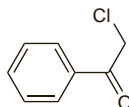
**Multi-ingredient:** **Austria:** Lithofalk†; **Ger.:** Lithofalk; Urso Mix†; **Gr.:** Lithofalk†; **Ital.:** Bilenor.

## Chloroacetophenone

$\omega$ -Chloroacetophenone; 1-Chloroacetophenone; Cloroacetofenona; CN; CN Gas; Phenacyl Chloride. 2-Chloroacetophenone.

C<sub>8</sub>H<sub>7</sub>ClO = 154.6.

CAS — 532-27-4.



**NOTE.** The name mace is applied to solutions of chloroacetophenone.

**Profile**

Chloroacetophenone is a lachrymatory which is irritant to the skin and eyes. It has been used in a riot-control gas; it is described as a tear gas.

◇ References.

- Hu H, et al. Tear gas—harassing agent or toxic chemical weapon? *JAMA* 1989; **262**: 660–3.
- Treudler R, et al. Occupational contact dermatitis due to 2-chloroacetophenone tear gas. *Br J Dermatol* 1999; **140**: 531–4.
- Blain PG. Tear gases and irritant incapacitants. 1-chloroacetophenone, 2-chlorobenzylidene malononitrile and dibenz[b,f]-1,4-oxazepine. *Toxicol Rev* 2003; **22**: 103–10.

## Chloroplatinic Acid

Cloroplátinico; ácido; Kloroplátinasyra; Kwas chloroplatynowy; Hexachloroplatinic acid hexahydrate.

H<sub>2</sub>PtCl<sub>6</sub>·6H<sub>2</sub>O = 517.9.

CAS — 16941-12-1 (anhydrous chloroplatinic acid); 18497-13-7 (chloroplatinic acid hexahydrate).

**Profile**

Aqueous solutions of platinum chloride (PtCl<sub>4</sub> = 336.9) are used in corneal tattooing solutions.

## Chondroitin Sulfate Sodium

Chondroitin 4-Sulfate (chondroitin sulfate A); Chondroitin Sulphate Sodium; Chondroitine, sulfate sodique de; Chondroitini natrii sulfas; Chondroitin-sulfát sodná sůl; Chondroitiny sodu siarczan; CSA (chondroitin sulfate A); Sodium Chondroitin Sulfate; Sodyum Kondroitin Sulfat.

(C<sub>14</sub>H<sub>19</sub>NO<sub>14</sub>SN<sub>3</sub>)<sub>n</sub>.

CAS — 9007-28-7 (chondroitin sulfate); 9082-07-9 (chondroitin sulfate sodium); 24967-93-9 (chondroitin sulfate A); 39455-18-0 (chondroitin sulfate A sodium); 25322-46-7 (chondroitin sulfate C); 12678-07-8 (chondroitin sulfate C sodium).

ATC — M01AX25.

ATC Vet — QM01AX25.

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

**Ph. Eur. 6.2** (Chondroitin Sulphate Sodium). A natural copolymer based mainly on the two disaccharides obtained from cartilage of both terrestrial and marine origins. Depending on the animal species of origin, it shows different proportions of 4-sulfate and 6-sulfate groups. A white or almost white, hygroscopic powder. Freely soluble in water; practically insoluble in alcohol and in acetone. A 5% solution in water has a pH of 5.5 to 7.5. Store in airtight containers. Protect from light.

**USP 31** (Chondroitin Sulfate Sodium). The sodium salt of the sulfated linear glycosaminoglycan obtained from bovine, porcine, or avian cartilages of healthy and domestic animals used for food by humans. It consists mostly of the sodium salt of the sulfated ester of *N*-acetylchondrosamine (2-acetamido-2-deoxy- $\beta$ -D-galactopyranose) and *D*-glucuronic acid copolymer. These hexoses are alternately linked  $\beta$ -1,4 and  $\beta$ -1,3 in the polymer. Chondrosamine moieties in the prevalent glycosaminoglycan are monosulfated primarily on position 4 and less so on position 6. Chondroitin sulfate sodium is extremely hygroscopic once dried. Store in airtight containers.

**Profile**

Chondroitin sulfate is an acid mucopolysaccharide that is a constituent of most cartilaginous tissues. It is used as the sodium salt, chondroitin sodium sulfate. It is given orally in reactive arthritides (see under Spondyloarthropathies, p.13), such as gonococcal arthritis, and is sometimes given with glucosamine (p.2313) for its supposed chondroprotective action in bone, joint, and connective tissue disorders. It is also used for its visco-elastic properties as an adjunct to ocular surgical procedures, including cataract extraction and intra-ocular lens implantation, and has been used for the relief of dry eye. A medium containing chondroitin sulfate A has been used to preserve corneas for transplantation. Chondroitin sulfate sodium has also been used as a means of replacing the glycosaminoglycan layer in the bladder in the treatment of interstitial cystitis (p.2179). Chondroitin sulfate A and C are components of the heparinoid danaparoid (p.1255).

**Osteoarthritis.** For references to the use of chondroitin in the treatment of osteoarthritis, including doubts about its value, see under Glucosamine, p.2313.

**Preparations**

**USP 31:** Chondroitin Sulfate Sodium Tablets; Glucosamine and Chondroitin Sulfate Sodium Tablets; Glucosamine, Chondroitin Sulfate Sodium, and Methylsulfonylmethane Tablets.

**Proprietary Preparations** (details are given in Part 3)

**Arg.:** Biofogli; Condrotina†; Condrosulf†; Dunason; Liquepin; Lubricin; Norfisar†; Prof; Structum; **Austria:** Condrosulf; **Belg.:** Lacrypos; **Braz.:** Dunason; **Canad.:** Uracyst; **Chile:** Condrosulf; **Cz.:** Condrosulf; **Fr.:** Condrosulf; Lacrypos; Structum; **Ger.:** Uropol-S; **Hung.:** Condrosulf; **Indon.:** Viostin S; **Malaysia:** Chondri; **Mex.:** Condrosulf; Dunason; Maxus; Structum; **Pol.:** Condral; Reacalmin; **Port.:** Condrosulf; Ossin; **Rus.:** Chondroitine-Akos (Хондротин-Акос); Chondroion (Хондроион); Structum (Структурм); **Spain:** Condrosan; Condrosulf; **Switz.:** Condrosulf; Structum.

**Multi-ingredient:** **Arg.:** Artinlase Complex; Artrocaptin; Asotrex; Balartrin Duo; Cartiflex Forte; Ecosamina; Etnox; Finartin; Findol Plus; Gluco Arrumalon Duo; Glucotrin VL; Lacrimax; Maxus; Mecanyl Duo; Optilac; Sigmaxflex; Vartalon Duo; Viscoat; **Austral.:** Duovisc; GenFlex 3; GenFlex Plus; Viscoat; **Braz.:** Artroliver; Condrosulf; **Canad.:** Uracyst Test Kit; **Chile:** Artrolid Duo; Condrosamin†; Dinaflex Duo; Euroflex; Flexure; Hiperflex; Osteo Bi-Flex; **Fr.:** Viscoat; **Ger.:** Duovisc; Integra†; **India:** **Hong Kong:** Arthritil Plus; Duovisc†; Viscoat†; **Hung.:** Viscoat†; **India:** Cosantin†; Kondro; Osteocip; Osteoflex; **Indon.:** Aptivium; Optimum Joint Formula; Artrox; Artritin; Bonic; Cartin Plus; Chondro-PA; Fitbon Plus; Flexor; Fripos; Joint Care; Jointfit; Maxitrix; Natunica Arthro; Natunica Arthro Plus; OA; OA Forte; OA Plus; Osamin; Oste; Ostela; Osteoflam; Osteokom; Osteokom Forte; Osteonic; Osteor; Osteor Plus; Osteor-C; Osivon Plus; Rheumatin; Rheumatin Forte; Triflexor; Triostee; Viopor; Viopor-M; Viostin Com; Viostin Com DS; Viostein; **Ital.:** Cartago; Fitogenase; Joint Support; Reumilase SD; Viscoat; **Malaysia:** Duovisc; Viscoat; **Mex.:** Actiman; Artiflex; Vartalon Compositum; **NZ:** Viscoat; **Philipp.:** Flexibon; Viscoat; **Rus.:** Artra (Артра); Chondroitine-Akos (Хондротин-Акос); Chondroxide (Хондроксид); Theraxflex (Терафлекс); **S.Afr.:** Duovisc; Viscoat; **Singapore:** Artril C; Duovisc; Flexeze†; Glutilage Plus; Seven Seas JointCare; Viscoat; **Thai.:** Duovisc; Viscoat; **Turk.:** Duovisc; Viscoat; **UK:** Flexeze; GlucOsamax; Joint Action; Jointace; **USA:** DisCoVisc; Viscoat; **Venez.:** Artrosamin; Viscoat†.

## Chrome Alum

Chromium Potassium Sulfate; Chromium Potassium Sulphate; Cromo, alumbre de.

KCr(SO<sub>4</sub>)<sub>2</sub>·12H<sub>2</sub>O = 499.4.

CAS — 10141-00-1 (anhydrous chrome alum); 7788-99-0 (chromium potassium sulfate dodecahydrate).