The BP 2008 gives Refined Starflower Oil as an approved synonym.

Profile
Borage oil is a source of essential fatty acids, principally gamolenic acid (p.2308). It is included in dietary supplements, often in combination with fish oils or other sources of omega-3 fatty acids (see p.1362).

Eczema. For the effects of borage oil on eczema, see under Gamolenic Acid, p.2308.

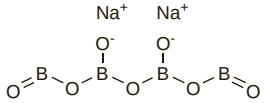
Rheumatoid arthritis. For the use of borage oil as a source of gamolenic acid for the management of rheumatoid arthritis, see under Gamolenic Acid, p.2309.

Preparations
Proprietary Preparations (details are given in Part 3)
Braz.: Tiliv L; ***Fr.:*** Gamatol†; Omegaline; ***Malaysia:*** Primolin GLA MAX†; ***Pol.:*** Biogal†; Neoglandyna; ***Switz.:*** Boracaps; ***UK:*** Floresse.

Multi-ingredient: ***Arg.:*** Ureadin Facial; ***Braz.:*** Borag; Gamaline-V; Livten Vit; ***Canad.:*** Primanol Borage Oil; ***Chile:*** Pruriced; Ureadin Facial; ***Fr.:*** Effadiane relipidantes; Elteans; Omegaline Solaire; Phytophanere; Phytosolaire; Pruriced; Topialyse; Topialyse Fluide; Topialyse Plus; ***Ital.:*** Topialyse; ***Pol.:*** Dehalid†; ***Port.:*** Antiestrias; Bioclin Sebo Care†; Hidratante VV; Nutraisdin; Rilastil Dermo Solar; Ureadin Facial; ***UK:*** Arheumacare.

Borax
Booraksi; Boraksas; Bórax; Disodium Tetraborate; Disodu tetraboran; E285; Natrii Tetraboras; Natrii Tetraboras Decahydricus; Natrium Boricum; Nátrium-tetraborát; Purified Borax; Sodium Biborate; Sodium Borate; Sodium Pyroborate; Sodium Tetraborate; Sodu tetraboran; Tetraboritan sodný dekahydrát.

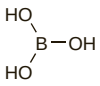
$Na_2B_4O_7,10H_2O$ = 381.4.
CAS — 1330-43-4 (anhydrous borax); 61028-24-8 (anhydrous borax); 1303-96-4 (borax decahydrate).
ATC — S01AX07.
ATC Vet — QS01AX07.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), and *Jpn.* Also in *USNF.*
Ph. Eur. 6.2 (Borax). Colourless crystals or crystalline masses, or white or almost white, crystalline powder. It effloresces. Soluble in water; very soluble in boiling water; freely soluble in glycerol. A 4% solution in water has a pH of 9.0 to 9.6.
The BP 2008 gives Sodium Borate and Sodium Tetraborate as official synonyms.
USNF 26 (Sodium Borate). Odourless transparent colourless crystals or white crystalline powder. Its solutions are alkaline to phenolphthalein. It effloresces in warm dry air. Soluble 1 in 16 of water, 1 in 1 of boiling water, and 1 in 1 of glycerol; insoluble in alcohol. Store in airtight containers.

Boric Acid
Acide borique; Ácido bórico; Acidum boricum; Boorihappo; Boracic Acid; Borato rūgštis; Borsäure; Bórsav; Borsyra; E284; Kwas borowy; Kyselina boritá; Orthoboric Acid; Sal Sedativa de Homberg.

H_3BO_3 = 61.83.
CAS — 10043-35-3.
ATC — S02AA03.
ATC Vet — QS02AA03.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Jpn*, and *Viet.* Also in *USNF.*
Ph. Eur. 6.2 (Boric Acid). Colourless shiny plates greasy to the touch, or white or almost white crystals, or white or almost white crystalline powder. Soluble in water and in alcohol; freely soluble in boiling water and in glycerol (85%). A 3.3% solution in water has a pH of 3.8 to 4.8.
USNF 26 (Boric Acid). Odourless, colourless, somewhat pearly lustrous scales, or crystals, or white powder, slightly unctuous to the touch. Soluble 1 in 18 of water, 1 in 4 of boiling water, 1 in 18 of alcohol, 1 in 6 of boiling alcohol, and 1 in 4 of glycerol.

Stability. Boric acid volatilises in steam. It forms a complex with glycerol which is a stronger acid than boric acid.

Adverse Effects, Treatment, and Precautions
The main symptoms of acute boric acid poisoning are vomiting and diarrhoea, abdominal pain, an erythematous rash involving both skin and mucous membranes, followed by desquamation, and stimulation or depression of the CNS. There may be convulsions and hyperpyrexia. There may also be renal tubular damage. Abnormal liver function and jaundice have been reported rarely. Death, resulting from circulatory collapse and shock, may occur within several days.

The slow excretion of boric acid can lead to cumulative toxicity during repeated use. Symptoms of chronic intoxication include anorexia, gastrointestinal disturbances, debility, confusion, dermatitis, menstrual disorders, anaemia, convulsions, and alopecia.

Fatalities have occurred most frequently in young children after the accidental ingestion of solutions of boric acid or after the application of boric acid powder to abraded skin.

In the UK the use of boric acid, borates, and tetraborates in cosmetics is controlled: the concentration is limited to 5% in talcs, to 0.1% in products for oral hygiene, and to 3% in other cosmetic products; tetraborates are limited to 18% in bath products. Such cosmetic products should not be used in children under 3 years of age; preparations used for oral hygiene should not be swallowed; and topical preparations containing greater than the equivalent of 1.5% of boric acid should not be applied to peeling or irritated skin.

Deaths have resulted from absorption after lavage of body cavities with solutions of boric acid, and this practice is no longer recommended.

Inhaled boric acid and borax are pulmonary irritants.

Treatment of poisoning is symptomatic. The stomach should be emptied if the patient presents within 1 hour of ingesting a large amount of boric acid; activated charcoal is not effective. Haemodialysis may be of value in severe cases.

◊ In Great Britain pharmacists have been advised not to sell boric acid as such for use as a dusting powder (see also above). Pharmacists have also been advised not to supply Borax Glycerin or Honey of Borax, even with an appropriate warning, because of the hazards associated with the use of these preparations in infants.

Pharmacokinetics
Boric acid is absorbed from the gastrointestinal tract, from damaged skin, from wounds, and from mucous membranes. It does not readily penetrate intact skin. About 50% of the amount absorbed is excreted in the urine within 24 hours and most of the remainder is excreted within 96 hours of ingestion.

Uses and Administration
Boric acid possesses weak bacteriostatic and fungistatic properties; it has generally been superseded by more effective and less toxic disinfectants. It is used as a pesticide against ants and cockroaches.

Boric acid is used, usually with borax, as a buffer and antimicrobial in eye drops, and was formerly used as a soluble lubricant in solution-tablets. It is also used as a preservative for urine samples. Boric acid and borax are not used internally.

In the UK, the use of boric acid in cosmetics and toiletries is restricted (see above).

Borax is used similarly to boric acid and has also been used externally as a mild astringent and as an emulsifier in creams. Preparations of borax in glycerol or in honey (Borax Glycerin; Honey of Borax) were formerly used as paints for the throat, tongue, and mouth, but should not be used because of the risk of toxicity.

Other salts of boric acid, including potassium and zinc salts, have been used.

Homoeopathy. Boric acid has been used in homoeopathic medicines under the following names: Acidum boricum; Acidum Boracicum; Ac. boric.

Borax has been used in homoeopathic medicines under the following names: Natrium tetraboracicum.

Antimicrobial activity. Evaluation of the antimicrobial activity of 1.22% borate buffer.[1]

1. Houlsby RD, *et al*. Antimicrobial activity of borate-buffered solutions. *Antimicrob Agents Chemother* 1986; **29:** 803–6.

Urine preservation. Boric acid in concentrations of about 2% may be a suitable preservative for urine samples in transit requiring bacteriological examination.[1,2] However, overnight storage of specimens preserved with boric acid may significantly alter culture results.[3]

1. Porter IA, Brodie J. Boric acid preservation of urine samples. *BMJ* 1969; **2:** 353–5.
2. Lum KT, Meers PD. Boric acid converts urine into an effective bacteriostatic transport medium. *J Infect* 1989; **18:** 51–8.
3. Gillespie T, *et al.* The effect of specimen processing delay on borate urine preservation. *J Clin Pathol* 1999; **52:** 95–8.

Vaginitis. Vaginal candidiasis (p.518) caused by *Candida glabrata* and other non-*albicans* species frequently responds to topical boric acid.[1,2] Satisfactory clinical and mycological responses to topical boric acid were reported in 2 patients with *Candida glabrata* vaginitis who had not responded to repeated courses of azole antifungals.[3] Treatment with boric acid effected clinical and mycological cure in 4 of 6 patients with refractory vaginitis caused by *C. krusei*.[4] Long-term boric acid treatment showed promise in the treatment and prevention of relapses of vulvovaginal candidiasis, but its efficacy ended when treatment was stopped.[5]

1. Sobel JD, Chaim W. Treatment of Torulopsis glabrata vaginitis: retrospective review of boric acid therapy. *Clin Infect Dis* 1997; **24:** 649–52.
2. Pappas PG, *et al*. Infectious Diseases Society of America. Guidelines for treatment of candidiasis. *Clin Infect Dis* 2004; **38:** 161–89. Also available at: http://www.journals.uchicago.edu/doi/pdf/10.1086/380796 (accessed 24/07/08)
3. Redondo-Lopez V, *et al.* Torulopsis glabrata vaginitis: clinical aspects and susceptibility of antifungal agents. *Obstet Gynecol* 1990; **76:** 651–5.
4. Singh S, *et al.* Vaginitis due to Candida krusei: epidemiology, clinical aspects, and therapy. *Clin Infect Dis* 2002; **35:** 1066–70.
5. Guaschino S, *et al.* Efficacy of maintenance therapy with topical boric acid in comparison with oral itraconazole in the treatment of recurrent vulvovaginal candidiasis. *Am J Obstet Gynecol* 2001; **184:** 598–602.

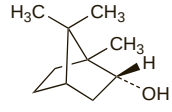
Preparations
BP 2008: Kaolin Poultice;
BPC 1973: Magenta Paint; Surgical Chlorinated Soda Solution;
USP 31: Rose Water Ointment.

Proprietary Preparations (details are given in Part 3)
Canad.: Eye Wash; ***Fr.:*** Dacryum; Hydralin; Optrex; ***Pol.:*** Aphtin; Borasol; Gemiderma; ***Turk.:*** Bibora; ***Venez.:*** Sax.

Multi-ingredient: ***Arg.:*** Anusol; Baby-Tex; Banoftal†; Bentophyto; Calcusan Bebe; Fungocop; Gineseptina†; Griseoplus; Hipoglos Cicatrizante; Hipoglos con Hidrocortisona; Histidanol†; Hyaluron; Irigal; Lagrimas de Santa Lucia†; Lemil; Parenciasț; Perfungol†; Phylarm; Plusderm†; Prurisedan; Sebulex; ***Austral.:*** Gold Cross BOZ Ointment†; ***Austria:*** Coldophthal; Ophtagutttal; ***Belg.:*** Alcasol; Boradrine; Borostyrol; Ocal; Sedemol; Sulfa-Sedemol; ***Braz.:*** Adeglos†; Antiphlogistine†; Bluderm†; Cariderm†; Cloraseptic; Colpagex N; Dermosed†; Dinill; Gynax-N; Gyrol†; Higicler; Hipodermon; Lavolho†; Leucocida†; Lucretin; Malvona†; Oto-Biotic†; Oturga; Po Antisseptico; Polvilho Antisseptico†; Pomaderme; Senophile†; Talco Alivio†; Vagitrin-N; Visiplex; Visual†; ***Canad.:*** British Army Foot Powder†; Thunas Eye Drops†; ***Chile:*** Dexagin; Frescansol; Hipoglos; Homeoplasmina†; Perfungol; ***Cz.:*** Aphlox†; Herbadent; Ophtal; Ophthalmo-Septonex; Pityol; ***Fin.:*** Otiborin; ***Fr.:*** Borostyrol; Dacryoboraline; Dacryoserum; Dacudoses; Eau Precieuse; Homeoplasmine; Hydralin; Ophtaclair; Ophtalmine; Paps; Pate a l'Eau Roche-Posay†; Phylarm†; Sophtal; ***Ger.:*** Ensinger Schiller-Quelle Heilwasser†; ***Gr.:*** Oulogram; Septobore; Vaseline Borique; ***Hong Kong:*** Eye Glo Plus; Eye Glo Regular; Eye Wash; Gly Thymol; Hydralin; ***India:*** Andre; Feel Chill; New Eye Lotion; Proto-Boric; ***Indon.:*** Skintex; Verile; ***Irl.:*** Phytex; ***Israel:*** Gargol; ***Ital.:*** Aquasalina†; Bagno Oculare†; Bergacid; Boma; Fotofil; Fucsina Fenica; ***Mex.:*** Clarex; Forcremol; Hipoglos; Lav Ofteno; Lowila; Oftaboril; Tokolirio; ***Mon.:*** Boroclarine; ***Philipp.:*** Soothing Eye Wash; United Home Burn Ointment; ***Pol.:*** Acifungin; Afronis; Dentosept A; Gargarin; Hemorectal; Neo-Tormentil; Pigmentum Castellani; Tormentile Forte; Tormentiol; ***Rus.:*** Contraceptin T (Контрацептин Т); Lysoplac (Лизоплак); Osarbon (Осарбон); ***S.Afr.:*** Anugesic; Caloplast; Prep; Universal Eye Drops; Vagarsol; ***Singapore:*** Eye Mo†; New Daigaku†; ***Spain:*** Banoftal; Cloran Hemidex; Coliniocilina Adren Astr; Dermomycose Liquido; Fungusol; Lamnotyl†; Milrosina; Natusan; Oftalmol Ocular; Pomada Infantil Vera†; Topico Dentician Vera†; Vaselina Boricada; Zolina; ***Swed.:*** Antasten-Privin; ***Thai.:*** Eye Mo; Eye-Gene; Eye-Gene Soft; Mano; Opplin†; Opsil†; Optal; Optic; Quinradon-N; Visotone; ***Turk.:*** Antidot; Dermikolin; Undo-Talk; ***UK:*** Oxy Clean Facial Scrub; Phytex; ***USA:*** BFI; Castaderm; Collyrium for Fresh Eyes; Columbia Antiseptic Powder; Dri/Ear; Ear-Dry; Paladin; Phylorinol; RA Lotion; Saratoga; Seale's Lotion; Star-Otic; Trimo-San; ***Venez.:*** Ademina; Boramint†; Bori-Zinc†; Borocanfor; Borogin; Diodonato†; Hipoglos†; Micofeet; Polifix†; Sebaxyl.

Borneol
Baros Camphor; Bhimsaim Camphor; Borneo Camphor; Borneokampfer; Bornyl Alcohol; Camphol; Dryobalanops Camphor; Malayan Camphor; Sumatra Camphor. *endo*-1,7,7-Trimethylbicyclo[2.2.1]heptan-2-ol.

Борнеол
$C_{10}H_{18}O$ = 154.2.
CAS — 507-70-0.



Pharmacopoeias. In *Chin* as synthetic borneol (Borneolum Syntheticum).

Profile
Borneol 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.

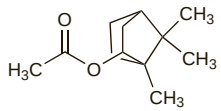
Preparations
Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Austria:*** Rowachol; Rowatinex; ***Chile:*** Rowatinex; ***Cz.:*** Rowachol; Rowatinex; ***Fr.:*** Biolau; ***Ger.:*** Rowachol; Rowachol comp†; Rowachol-Digestiv; Rowatinex; ***Hong Kong:*** Neo-Rowachol; Neo-Rowatinex; Rowachol; Rowatinex; ***Hung.:*** Rowachol; Rowatinex; ***Irl.:*** Rowachol; Rowatinex; ***Israel:*** Rowachol; Rowatinex; ***Malaysia:*** Rowachol; Rowatinex; ***Mex.:*** Cholex; ***Philipp.:*** Mentopas; Rowachol; Rowatinex; ***Pol.:*** Rowachol; Rowatinex; Terpichol; ***Singapore:*** New Daigaku†; ***Spain:*** Rowachol; Rowanefrin; ***Switz.:*** Rowachol; ***Thai.:*** Rowachol; Rowatinex; ***UK:*** Rowachol; ***Venez.:*** Rowachol; Rowatinex.

Bornyl Acetate *(USAN)*

Borneol Acetate; Bornilo, acetato de; Bornylu octan. 1,7,7-Trimethylbicyclo[2.2.1]heptan-2-ol acetate.

$C_{12}H_{20}O_2$ = 196.3.

CAS — 76-49-3.



Profile
Bornyl acetate is a constituent of some essential oils. It has been used in aromatic preparations in the treatment of coughs, other respiratory-tract disorders, and musculoskeletal and joint disorders.

Preparations
Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Arg.:*** Jabonacid; ***Chile:*** Expanden; ***Ger.:*** Lindofluid N.

Bromelains *(BAN, USAN, rINN)*

Bromelaiinit; Bromelaína; Bromelaina; Bromelainer; Bromelainy; Bromélaïones; Bromelins; Plant Protease Concentrate.

Бромелаины

CAS — 9001-00-7.

ATC — B06AA11.

ATC Vet — QB06AA11.

Units
One Rorer unit of protease activity has been defined as that amount of enzyme which hydrolyses a standardised casein substrate at pH 7 and 25° so as to cause an increase in absorbance of 0.00001 per minute at 280 nm. FIP units are also defined in terms of rate of hydrolysis of bromelain activity of a casein preparation under standard conditions.

Activity has also been described in terms of milk-clotting units.

Adverse Effects
Bromelains may cause nausea, vomiting, and diarrhoea. Metrorrhagia and menorrhagia have occasionally occurred. Hypersensitivity reactions have been reported and have included skin reactions and asthma.

Effects on the respiratory system. Bronchial asthma was experienced by 2 patients after exposure to bromelains.[1] Of 6 workers sensitised to papain, 5 showed positive skin tests to bromelains and 2 of them also showed immediate asthmatic reactions after bronchial challenge with bromelains.[2]

1. Galleguillos F, Rodriguez JC. Asthma caused by bromelin inhalation. *Clin Allergy* 1978; **8:** 21–4.
2. Baur X, Fruhmann G. Allergic reactions, including asthma, to the pineapple protease bromelain following occupational exposure. *Clin Allergy* 1979; **9:** 443–50.

Precautions
Bromelains should be given with care to patients with coagulation disorders or with severe hepatic or renal impairment.

Uses and Administration
Bromelains are a concentrate of proteolytic enzymes derived from the pineapple plant, *Ananas comosus* (*A. sativus*) (Bromeliaceae). They are used as an adjunct in the treatment of soft-tissue inflammation and oedema associated with trauma and surgery. Bromelains have also been given as an aid to digestion, and used in the treatment of partial deep dermal and full thickness burns.

◊ References.

1. Kane S, Goldberg MJ. Use of bromelain for mild ulcerative colitis. *Ann Intern Med* 2000; **132:** 680.
2. Maurer HR. Bromelain: biochemistry, pharmacology and medical use. *Cell Mol Life Sci* 2001; **58:** 1234–45.

Preparations
Proprietary Preparations (details are given in Part 3)

Chile: Ananase Forte; ***Fr.:*** Extranase; ***Ger.:*** dontisanin; Mucozym; Protezym; Traumanase; ***Hong Kong:*** Internase; ***Ital.:*** Ananase; ***Port.:*** Ananase; ***Switz.:*** Traumanase; ***Venez.:*** Ananase.

Multi-ingredient: ***Arg.:*** Phlogenzym†; ***Austral.:*** Bio-Disc; Bioglan Discone†; Digestaid; Digestive Aid; Prost-1†; Prozyme†; ***Austria:*** Arca-Enzym; Phlogenzym; Rutozym; Traumazym; Wobenzym; ***Braz.:*** Bromelin†; Expectoral†; Monocetin; Nutrizim†; Plasil Enzimatico; Reumat†; Sintozima; ***Cz.:*** Phlogenzym; Wobenzym; ***Ger.:*** Enzym-Wied†; Mulsal N†; Phlogenzym; Wobenzym N; ***Hung.:*** Phlogenzym; ***India:*** Merckenzyme; ***Indon.:*** Benozym; Elsazym; ***Ital.:*** Algorex; Bres†; Flogofort; Flogovis IdroGel; Inflamase; Inflamase IdroGel; Signum; ***Jpn:*** Kimotab; ***Mex.:*** Phlogenzym; Plasil Enzimatico; Wobenzym; ***Port.:*** Bioregime SlimKit†; ***Rus.:*** Phlogenzym (Флогэнзим); Wobenzym (Вобэнзим); ***UK:*** BackOsamine; Enzyme Digest; ***Venez.:*** Enzima de Lechoza†; Nutizym Compositum; Phlogenzym; Wobenzym N.

Bromides
Bromuros.

ATC — N05CM11.

ATC Vet — QN05CM11.

Ammonium Bromide
Ammon. Brom.; Ammonii bromidum; Ammonium Bromatum; Ammonium, bromure d'; Ammoniumbromid; Ammónium-bromid; Ammoniumbromidi; Amonio bromidas; Amonowy bromek; Brometo de Amônio; Bromid amonný.

NH_4Br = 97.94.

CAS — 12124-97-9.

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

Ph. Eur. 6.2 (Ammonium Bromide). A white or almost white, hygroscopic crystalline powder or colourless crystals. It becomes yellow when exposed to light or air. Freely soluble in water; sparingly soluble in alcohol. Store in airtight containers. Protect from light.

Potassium Bromide
Brometo de Potássio; Bromid draselný; Bromure de Potassium; Kalii bromidum; Kalio bromidas; Kalium Bromatum; Kaliumbromid; Kálium-bromid; Kaliumbromidi; Pot. Brom.; Potassii Bromidum; Potassium, bromure de; Potasu bromek.

KBr = 119.0.

CAS — 7758-02-3.

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

Ph. Eur. 6.2 (Potassium Bromide). A white or almost white, crystalline powder or colourless crystals. Freely soluble in water and in glycerol; slightly soluble in alcohol.

USP 31 (Potassium Bromide). A white crystalline powder or colourless, cubical crystals. Freely soluble in water and in glycerol; slightly soluble in alcohol.

Sodium Bromide
Brometo de Sódio; Bromid sodný; Bromure de Sodium; Natrii bromidum; Natrio bromidas; Natrium Bromatum; Natriumbromid; Nátrium-bromid; Natriumbromidi; Sod. Brom.; Sodii Bromidum; Sodium, bromure de; Sodu bromek.

NaBr = 102.9.

CAS — 7647-15-6.

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

Ph. Eur. 6.2 (Sodium Bromide). A slightly hygroscopic, white or almost white, granular powder, or small, colourless, transparent, or opaque crystals. Freely soluble in water; soluble in alcohol. Store in airtight containers.

USP 31 (Sodium Bromide). A white crystalline powder or colourless, cubical crystals. Freely soluble in water; soluble in alcohol.

Adverse Effects and Precautions
During prolonged exposure bromide accumulation may occur giving rise to bromide intoxication or bromism. Symptoms include nausea and vomiting, anorexia, confusion, behavioural disturbances, slurred speech, memory impairment, drowsiness, irritability, ataxia, tremors, hallucinations, mania, delirium, psychoses, stupor, coma, and other manifestations of CNS depression. Skin rashes of various types may occur and toxic epidermal necrolysis has been reported. Death after acute poisoning appears to be rare as vomiting follows the ingestion of large doses.

There have been reports of neonatal bromide intoxication and growth defects associated with maternal bromide ingestion during pregnancy.

Breast feeding. The American Academy of Pediatrics[1] considers that intake of bromides is usually compatible with breast feeding, although rashes, weakness, and absence of crying have been reported in the infant following maternal intake. Exposure to bromides in photographic laboratories may also result in potential absorption and transfer into breast milk.

1. American Academy of Pediatrics. The transfer of drugs and other chemicals into human milk. *Pediatrics* 2001; **108:** 776–89. Correction. *ibid.*; 1029. Also available at: http://pediatrics.aappublications.org/cgi/content/full/108/3/776 (accessed 22/07/08)

Treatment of Adverse Effects
In acute poisoning, the stomach should be emptied (if emesis has not already occurred), and sodium chloride should be given by intravenous infusion. Glucose may also be used and furosemide may be given to aid diuresis.

In chronic poisoning, bromides are stopped and sodium chloride is given intravenously or orally with adequate amounts of fluid. Ammonium chloride has been given but is no longer recommended as it may precipitate metabolic acidosis. Diuretics are of value. In severe cases of bromide intoxication, or when the usual treatments cannot be used, haemodialysis may be of benefit.

Pharmacokinetics
Bromides are readily absorbed from the gastrointestinal tract. They displace chloride in extracellular body fluids and have a half-life in the body of about 12 days. They may be detected in the milk of nursing mothers and in the fetus.

Uses and Administration
Bromides depress the CNS. Calcium, potassium, and sodium bromide have been used as sedatives and anticonvulsants, but have generally been replaced by more effective, less toxic drugs. Ammonium and strontium bromide have been used similarly, as have bromoform and dilute hydrobromic acid. Bromides have also been used in multi-ingredient preparations for the treatment of coughs.

Homoeopathy. Hydrobromic acid and various bromides have been used in homoeopathic medicines under the following names:

- Hydrobromic acid: Hydr. ac.
- Ammonium bromide: Ammonium bromatum; Ammonium bromidum; Amm. brom.
- Arsenic bromide: Arsenicum bromatum; Ars. brom.
- Cadmium bromide: Cadmium bromatum; Cad. brom.
- Calcium bromide: Calcarea bromata; Calc. bro.
- Ferrous bromide: Ferrum bromatum; Fer. brom.
- Potassium bromide: Kalium bromatum; Kali bromatum; Kali. br.
- Sodium bromide: Natrum bromatum; Nat. brom.
- Radium bromide: Rad. br.
- Zinc bromide: Zincum bromatum; Zinc. br.

Preparations
Proprietary Preparations (details are given in Part 3)
Ger.: Dibro-Be Mono.

Multi-ingredient: ***Braz.:*** Alergitrat†; Bromidrastina†; Frenotosse; Gotas Nican†; Naquinto†; Xarope de Caraguata†; Xarope Peitoral de Ameixa Composto†; Xarope Sao Joao†; Xpe SPC†; ***Chile:*** Gotas Nican†; Gruben; Ramistos; ***Fr.:*** Galirene†; Sedatif Tiber; ***Indon.:*** Thymcal; ***Ital.:*** Fertomcidina-U; ***Pol.:*** Sal Ems Factitium; ***S.Afr.:*** Bronchicum†; ***Spain:*** Topico Denticion Vera†.

Bromine
Brom; Bromo; Bromum.

Br_2 = 159.808.

CAS — 7726-95-6.

Description. Bromine is a dark reddish-brown, heavy, mobile liquid that gives off intensely irritating brown fumes.

Adverse Effects
Bromine is intensely irritating and corrosive to eyes and mucous membranes; it may cause severe gastro-enteritis if swallowed. Contact with the skin can produce severe burns, and inhalation of the vapour causes violent irritation of the respiratory tract and pulmonary oedema.

Treatment of Adverse Effects
Milk or antacids should be given as soon as possible following ingestion of bromine. Gastric lavage is not recommended. If bromine vapour has been inhaled, oxygen should be administered and assisted ventilation may be necessary. The use of prophylactic corticosteroids for laryngeal and pulmonary oedema is controversial. Splashes on the skin and eyes should be immediately washed off; washing under running water should continue for at least 15 minutes.

Uses and Administration
Bromine is widely used in industry. It was formerly used, in the form of an adduct with a quaternary ammonium compound, in the treatment of plantar warts.

Bryonia
Bryony; Nueza.

Profile
Bryonia, the root of *Bryonia alba* or *B. dioica* (Cucurbitaceae), is an ingredient of preparations that have been used in respiratory-tract infections and inflammatory disorders. Toxic symptoms and fatalities have been reported after ingestion of the berries.

Homoeopathy. Bryonia has been used in homoeopathic medicines under the following names: Bryonia cretica; Bryonia e radice; Bry. cre.; Bryonia alba; Bry. alba.

Preparations
Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Cough Relief†; Joint & Muscle Cream; ***Cz.:*** Homeovox; ***Fr.:*** Homeoplasmine; ***Mex.:*** Reudol.

Buchu
Barosma; Bucco; Buchú; Buchu Leaves; Diosma; Folia Bucco.

CAS — 68650-46-4 (buchu leaf oil).

Pharmacopoeias. In *Fr.*, which allows the dried leaves of *Agathosma betulina* (short or round buchu), *A. crenulata* (oval buchu), and *A. serratifolia* (long buchu).

Profile
Buchu, the dried leaves of 'short' or 'round' buchu, *Agathosma betulina* (*Barosma betulina*) (Rutaceae), is a weak diuretic and urinary antiseptic that has been used in multi-ingredient preparations for the treatment of urinary-tract disorders. Oval or long buchu, the leaves of *Agathosma crenulata* (*B. crenulata*), has