4. Neri I, *et al.* Childhood allergic contact dermatitis from henna tattoo. *Pediatr Dermatol* 2002; **19:** 503–5.
5. Bowling JC, Groves R. An unexpected tattoo. *Lancet* 2002; **359:** 649.
6. Leggiadro RJ, *et al.* Temporary tattoo dermatitis. *J Pediatr* 2003; **142:** 586.
7. Matulich J, Sullivan J. A temporary henna tattoo causing hair and clothing dye allergy. *Contact Dermatitis* 2005; **53:** 33–6.
8. Sosted H, *et al.* Severe allergic hair dye reactions in 8 children. *Contact Dermatitis* 2006; **54:** 87–91.
9. Redlick F, DeKoven J. Allergic contact dermatitis to paraphenylendiamine in hair dye after sensitization from black henna tattoos: a report of 6 cases. *CMAJ* 2007; **176:** 445–6.
10. Sonnen G. Type IV hypersensitivity reaction to a temporary tattoo. *Proc (Bayl Univ Med Cent)* 2007; **20:** 36–8.

Heptaminol Hydrochloride *(BANM, rINNM)* ⊗

Heptaminol, Chlorhydrate d'; Heptaminol, chlorhydrate de; Heptaminol hydrochlorid; Heptaminol-hidroklorid; Heptaminolhydroklorid; Heptaminoli hydrochloridum; Heptaminolihydrokloridi; Heptaminolio hidrochloridas; Hidrocloruro de heptaminol; RP-2831. 6-Amino-2-methylheptan-2-ol hydrochloride.

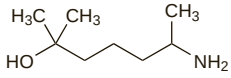
Гептаминола Гидрохлорид

$C_8H_{19}NO,HCl$ = 181.7.

CAS — 372-66-7 (heptaminol); 543-15-7 (heptaminol hydrochloride).

ATC — C01DX08.

ATC Vet — QC01DX08.



(heptaminol)

Pharmacopoeias. In *Eur.* (see p.vii).
Ph. Eur. 6.2 (Heptaminol Hydrochloride). A white or almost white crystalline powder. Freely soluble in water; soluble in alcohol; practically insoluble in dichloromethane.

Profile
Heptaminol hydrochloride is a cardiac stimulant and vasodilator and has been given in the treatment of cardiovascular disorders. Heptaminol and heptaminol adenosine phosphate have also been used.

Preparations
Proprietary Preparations (details are given in Part 3)
Fr.: Ampecyclal; Hept-A-Myl; ***Indon.:*** Hept-a-myl; ***Ital.:*** Coreptil†.

Multi-ingredient: ***Arg.:*** Flebitol; ***Cz.:*** Ginkor Fort; ***Fr.:*** Debrumyl; Ginkor Fort; ***Ger.:*** Normotin-R†; Perivar†; Veno-Tebonin N†; ***Hong Kong:*** Ginkor Fort; ***Hung.:*** Ginkor Fort; ***Malaysia:*** Ginkor Fort; ***Port.:*** Debrumyl; Forticol; ***Rus.:*** Ginkor Fort (Гинкор Форт); ***Spain:*** Denubil; Largatrex†; ***Thai.:*** Ginkor Fort.

Herniaria

Bruchkraut; Herba Herniariae; Herniary; Rupturewort; Rupturewort.

Profile
Herniaria consists of the dried leaves and flowering tops of various species of rupture-wort, chiefly *Herniaria glabra* and *H. hirsuta* (Caryophyllaceae). It has astringent and diuretic properties and has been given in urinary-tract disorders.

Homoeopathy. Herniaria has been used in homoeopathic medicines under the following names: Herniaria glabra; Hern. gla.

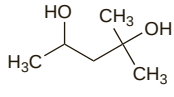
Preparations
Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Austria:*** Blasentee St Severin; Uropurat; ***Cz.:*** Urologicka Cajova Smes.

Hexylene Glycol

Hexilenglicol. 2-Methyl-2,4-pentanediol.

$C_6H_{14}O_2$ = 118.2.

CAS — 107-41-5.



Pharmacopoeias. In *USNF.*
USNF 26 (Hexylene Glycol). A clear, colourless, viscous liquid. Absorbs moisture when exposed to moist air. Miscible with water and with many organic solvents including alcohol, acetone, chloroform, ether, and hexanes. Store in airtight containers.

Profile
Hexylene glycol has properties similar to those of propylene glycol (p.2374). It is used as a pharmaceutical aid.

Preparations
Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***USA:*** Bodi Kleen.

Hibiscus

Guinea Sorrel; Hibisci Flos (flowers); Hibisci Sabdariffae Flos (flowers); Hibiscusblüten (flowers); Jamaica Sorrel; Jamaikinių hibiskų žiedai (flowers); Karkadé; Květ ibišku sudánského (flowers); Oseille de Guinée; Red Sorrel; Rosella; Rosellenkukka (flowers) ; Rosellhibiskusblomma (flowers); Rozella (flowers).

Гибискус Сабдарифа; Кислица Ямайская

Pharmacopoeias. In *Eur.* (see p.vii).
Ph. Eur. 6.2 (Roselle; Hibisci Sabdariffae Flos). The whole or cut dried calyces and epicalyces of *Hibiscus sabdariffa* collected during fruiting.

Profile
Hibiscus is a large genus of flowering plants in the Malvaceae family. The flowers of roselle, *Hibiscus sabdariffa*, are included in herbal preparations for loss of appetite and a range of disorders of the upper respiratory and gastrointestinal tracts.

Culinary uses of *H. sabdariffa* include hibiscus tea, a refreshing caffeine-free beverage made from the flowers.

Homoeopathy. *Hibiscus sabdariffa* has been used in homoeopathic medicines under the following names: Sabdariffa.

Preparations
Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Fr.:*** Calmophytum; Hydracur.

Histamine

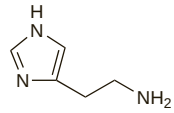
Histamiini; Histamin; Histamina; Histaminum. 2-(Imidazol-4-yl)ethylamine.

$C_5H_9N_3$ = 111.1.

CAS — 51-45-6.

ATC — V04CG03.

ATC Vet — QV04CG03.



Histamine Hydrochloride

Histamiinidihydrokloridi; Histamina, hidrocloruro de; Histamindihydrochlorid; Histamindihydroklorid; Histamine, dichlorhydrate d'; Histamine Dihydrochloride *(USAN)*; Histamini dihydrochloridum; Histamino dihidrochloridas; Histaminy dichlorowodorek; Hisztamin-dihidroklorid.

$C_5H_9N_3,2HCl$ = 184.1.

CAS — 56-92-8.

ATC — L03AX14; V04CG03.

ATC Vet — QL03AX14; QV04CG03.

Pharmacopoeias. In *Eur.* (see p.vii).
Ph. Eur. 6.2 (Histamine Dihydrochloride). Hygroscopic, colourless crystals or white or almost white crystalline powder. Very soluble in water; soluble in alcohol. A 5% solution in water has a pH of 2.85 to 3.60. Protect from light.

Histamine Phosphate

Histamiinifosfaatti; Histamin difosfát monohydrát; Histamina, fosfato de; Histamine Acid Phosphate; Histamine Diphosphate; Histamine, phosphate d'; Histaminfosfat; Histamini Diphosphas Monohydricus; Histamini phosphas; Histamino fosfatas; Histaminy fosforan; Hisztamin-foszfát.

$C_5H_9N_3,2H_3PO_4,H_2O$ = 325.2.

CAS — 51-74-1 (anhydrous histamine phosphate).

ATC — V04CG03.

ATC Vet — QV04CG03.

Pharmacopoeias. In *Eur.* (see p.vii). *Chin.* and *US* specify the anhydrous substance.
Ph. Eur. 6.2 (Histamine Phosphate). Colourless, long prismatic crystals. Freely soluble in water; slightly soluble in alcohol. A 5% solution in water has a pH of 3.75 to 3.95. Protect from light.
USP 31 (Histamine Phosphate). Anhydrous histamine phosphate occurs as colourless, odourless, long prismatic crystals. Is stable in air but is affected by light. Soluble 1 in 4 of water. Its solutions are acid to litmus. Store in airtight containers. Protect from light.

Stability. A study concluded that solutions of histamine phosphate could be sterilised by heating in an autoclave with little degradation.[1] Autoclaved solutions could be stored for a minimum of 4 months.

1. McDonald C, *et al.* Stability of solutions of histamine acid phosphate after sterilization by heating in an autoclave. *J Clin Pharm Ther* 1990; **15:** 41–4.

Adverse Effects and Treatment
Injection of histamine salts can produce adverse effects including headache, flushing of the skin, general vasodilatation with a fall in blood pressure, tachycardia, bronchial constriction and dyspnoea, visual disturbances, vomiting, diarrhoea, and other gastrointestinal effects. These reactions can be severe; excessive dosage can produce collapse and shock, and may be fatal. Reactions may occur at the injection site.

Some of these effects may be relieved by an antihistamine, but adrenaline may be required and should always be available.

Precautions
Histamine salts should be used with care in patients with asthma or other hypersensitivity disorders, in elderly patients, and in patients with cardiovascular disorders.

Pharmacokinetics
Histamine salts exert a rapid, though transient, effect when given parenterally. Histamine is rapidly metabolised by methylation and oxidation; the metabolites are excreted in the urine.

◊ References.

1. Middleton M, *et al.* Pharmacokinetics of histamine dihydrochloride in healthy volunteers and cancer patients: implications for combined immunotherapy with interleukin-2. *J Clin Pharmacol* 2002; **42:** 774–81.

Uses and Administration
Histamine causes stimulation of smooth muscle, especially of the bronchioles, and lowers blood pressure by dilating the arterioles and capillaries. It also stimulates exocrine gland secretion, especially the gastric glands.

Intradermal injection of histamine produces the characteristic 'triple response' of erythema, flare, and wheal. This is utilised as a control response in skin testing for hypersensitivity. Also, since it is mediated in part by axon reflexes, it has been used to test the integrity of sensory nerves, for example in leprosy.

Inhalation of histamine causes bronchoconstriction and is used as a test of bronchial reactivity.

Histamine has also been given subcutaneously to identify the causes of achlorhydria and intravenously in the diagnosis of phaeochromocytoma, but safer tests are generally preferred.

Histamine is included in some combination topical preparations for musculoskeletal disorders.

Histamine hydrochloride is under investigation as an adjunct in the management of acute myeloid leukaemia and malignant melanoma. It has also been tried as an adjunct to interferons and other drugs in the management of hepatitis C.

Preparations
USP 31: Histamine Phosphate Injection.

Proprietary Preparations (details are given in Part 3)
Mex.: Destamin; ***Port.:*** Soluprick; ***Venez.:*** Histalgan Balsamo†.

Multi-ingredient: ***Arg.:*** Histaglobin; Infrarub†; ***Austria:*** Histaglobin; ***Canad.:*** Midalgan†; ***Cz.:*** Histaglobin†; ***Fr.:*** Algipan; ***Ger.:*** Histadestal; ***India:*** Algipan; Histaglobulin; ***Neth.:*** Cremor capsici comp; Cremor Capsici compositus; Kruidvat Spierbalsem; ***Pol.:*** Histaglobulina; ***Port.:*** Midalgan†; ***S.Afr.:*** Histaglobin; Infrarub; ***Switz.:*** Midalgan; Radalgin.

Histoplasmin

Histoplasmina.

Pharmacopoeias. In *US.*
USP 31 (Histoplasmin). A clear, colourless, sterile solution containing standardised culture filtrates of *Histoplasma capsulatum* grown on liquid synthetic medium. It may contain a suitable antimicrobial. Store at 2° to 8°. The expiry date is not later than 2 years after release from the manufacturer's cold storage.

Profile
Histoplasmin, in an intradermal (intracutaneous) dose of 0.1 mL of a 1 in 100 dilution, may be used as an aid to the diagnosis of histoplasmosis. However, the diagnostic value of the test has been questioned and it may interfere with serological tests for histoplasmosis.

Histoplasmin has also been used, in conjunction with other antigens, to assess cell-mediated immunity.

Preparations
USP 31: Histoplasmin.

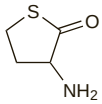
Proprietary Preparations (details are given in Part 3)
USA: Histolyn-CYL.

Homocysteine Thiolactone Hydrochloride

3-Aminodihydro-2(3*H*)-thiophenone hydrochloride.

C_4H_8ClNOS = 153.6.

CAS — 10593-85-8 (homocysteine thiolactone); 3622-59-1 (homocysteine thiolactone hydrochloride).



(homocysteine thiolactone)

Profile

Homocysteine thiolactone has been used in preparations for the treatment of liver disorders. Its hydrochloride salt has been used as a mucolytic. Homocysteine thiolactone is a metabolite of homocysteine and has been implicated in the pathogenesis of some cardiovascular diseases (see p.1941).

◊ References.

1. Chwatko G, Jakubowski H. Urinary excretion of homocysteine-thiolactone in humans. *Clin Chem* 2005; **51:** 408–15.
2. Jakubowski H. The molecular basis of homocysteine thiolactone-mediated vascular disease. *Clin Chem Lab Med* 2007; **45:** 1704–16.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Braz.:*** Filogaster†.

Horseradish

Armoracia; Meerrettich; Rábano rusticano; Raifort.

Profile

Horseradish, the root of *Cochlearia armoracia* (*Armoracia rusticana*; *Nasturtium armoracia*; *Radicula armoracia*) (Cruciferae), has diuretic and antiseptic properties and stimulates the digestion. It is used in gastrointestinal, respiratory-tract, and urinary-tract disorders, and has also been used externally.

Horseradish is widely used as a food flavouring and condiment.

Homoeopathy. Horseradish has been used in homoeopathic medicines under the following names: Cochlearia armoracia; Coch. ar.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Garlic and Horseradish + C Complex; Garlic, Horseradish, A & C Capsules†; Procold†; ***Braz.:*** Infantoss†; ***Ger.:*** Angocin Anti-Infekt N; ***Malaysia:*** Horseradish Plus†; ***Switz.:*** Kernosan Elixir; Pectosan N†; Sanogencive; ***UK:*** Mixed Vegetable Tablets.

Hyaluronic Acid *(BAN)*

Hialurónico, ácido. (1→3)-*O*-(2-Acetamido-2-deoxy-β-D-glucopyranosyl)-(1→4)-*O*-β-D-glucopyranosiduronan.

CAS — 9004-61-9.

ATC — D03AX05; M09AX01; S01KA01.

ATC Vet — QD03AX05; QM09AX01; QS01KA01.

NOTE. The term Hyaluronan is used to cover both hyaluronic acid and sodium hyaluronate.

Sodium Hyaluronate *(BANM)*

Hialuronato sódico; Hyaluronate Sodium *(USAN)*; Natrii hyaluronas; Natrio hialuronatas; Nátrium-hialuronát; Natriumhyaluronaatti; Natriumhyaluronat; Natrium-hyaluronát; Sodium, hyaluronate de; Sodyum Hiyalüronat.

CAS — 9067-32-7.

ATC — D03AX05; M09AX01; S01KA01.

ATC Vet — QD03AX05; QM09AX01; QS01KA01.

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

Ph. Eur. 6.2 (Sodium Hyaluronate). The sodium salt of hyaluronic acid, a glycosaminoglycan consisting of D-glucuronic acid and *N*-acetyl-D-glucosamine disaccharide units. It is extracted from cocks' combs or obtained by fermentation from streptococci (Lancefield Groups A and C). A white or almost white, very hygroscopic powder or a fibrous aggregate. Sparingly soluble to soluble in water; practically insoluble in dehydrated alcohol and in acetone. A 0.5% solution in water has a pH of 5.0 to 8.5. Store in airtight containers. Protect from light and humidity.

Adverse Effects

There have been reports of a transient rise in intra-ocular pressure when sodium hyaluronate was given into the eye. When injected into the knee, pain and inflammation may occur at the injection site. There have also been occasional reports of hypersensitivity, including, rarely, anaphylaxis.

Effects on the eyes. Crystalline deposits on intra-ocular lenses have been reported in patients after use of a high viscosity sodium hyaluronate preparation during cataract surgery.[1]

1. Jensen MK, *et al.* Crystallization on intraocular lens surfaces associated with the use of Healon GV. *Arch Ophthalmol* 1994; **112:** 1037–42.

Effects on the skin. A cutaneous granulomatous reaction has been reported in a woman 5 weeks after treatment with synthetic hyaluronic acid for cosmetic use as a dermal filler.[1] All cutaneous lesions resolved spontaneously within 3 months without scarring.

1. Ghislanzoni M, *et al.* Cutaneous granulomatous reaction to injectable hyaluronic acid gel. *Br J Dermatol* 2006; **154:** 755–8.

Inflammatory reaction. Severe peritoneal inflammation has been reported[1] after use of a sodium hyaluronate-based bioresorbable membrane to prevent postoperative adhesion formation.

1. Klingler PJ, *et al.*. Seprafilm -induced peritoneal inflammation: a previously unknown complication: report of a case. *Dis Colon Rectum* 1999; **42:** 1639–43.

Uses and Administration

Hyaluronic acid is widely distributed in body tissues and intracellular fluids, including the aqueous and vitreous humour, and synovial fluid; it is a component of the ground substance or tissue cement surrounding cells.

A viscous solution of sodium hyaluronate is used during surgical procedures on the eye, for example for cataract extraction. Introduction of the solution into the anterior or posterior chamber via a fine cannula or needle allows tissues to be separated during surgery and protects them from trauma. Sodium hyaluronate eye drops 0.1% are also used for the relief of dry eye and as a contact lens lubricant.

Sodium hyaluronate is given by intra-articular injection in the treatment of osteoarthritis of the knee. Doses vary according to the preparation used, but are of the order of 20 to 25 mg once weekly for 5 weeks or up to 30 mg once weekly for 3 or 4 weeks; it is generally recommended that the treatment course for any individual joint should not be repeated within 6 months. Sodium hyaluronate is also used during arthroscopic procedures to flush out irrigating solutions and act as a temporary substitute for synovial fluid.

Hyaluronic acid is applied topically to promote wound healing. Zinc hyaluronate has also been used. A film containing sodium hyaluronate and carmellose is used to prevent surgical adhesion. Sodium hyaluronate has also been used in the management of lesions of the oral mucosa.

Hylans, which are polymers derived from hyaluronic acid, are used similarly for osteoarthritis and wound care.

Sodium hyaluronate instilled intravesically has been used as a temporary replacement of the glycosaminoglycan layer in the bladder for the symptomatic treatment of interstitial cystitis.

Topical formulations of diclofenac in hyaluronic acid (CT-1101, AT-2101) are used in the treatment of actinic keratoses (but distinguish from an oral formulation of isofagomine tartrate (p.2327) under investigation for use in Gaucher disease that also carries the code AT-2101).

Hyaluronic acid has been used as a dermal filler for the correction of moderate to severe facial wrinkles and folds (see Photoageing, p.1581).

◊ Reviews.

1. Goa KL, Benfield P. Hyaluronic acid: a review of its pharmacology and use as a surgical aid in ophthalmology, and its therapeutic potential in joint disease and wound healing. *Drugs* 1994; **47:** 536–66.
2. Adams ME, *et al.* A risk-benefit assessment of injections of hyaluronan and its derivatives in the treatment of osteoarthritis of the knee. *Drug Safety* 2000; **23:** 115–30.

Actinic keratoses. For references to the use of diclofenac in a hyaluronic acid gel in the treatment of actinic keratoses, see p.46.

Dry eye. The usual management of dry eye (p.2140) is with artificial tears. Sodium hyaluronate has also been reported to be of some benefit. Alleviation of symptoms[1-3] and an increase in tear film stability[1,2] has been shown after topical application of sodium hyaluronate solution (0.1 or 0.2%) compared with saline-based placebo solutions. However, another study[4] failed to show any advantage over placebo, although it has been suggested[4,5] that sodium hyaluronate might play a role in maintaining a healthy corneal epithelium.

1. Mengher LS, *et al.* Effect of sodium hyaluronate (0.1%) on break-up time (NIBUT) in patients with dry eyes. *Br J Ophthalmol* 1986; **70:** 442–7.
2. Sand BB, *et al.* Sodium hyaluronate in the treatment of keratoconjunctivitis sicca: a double masked clinical trial. *Acta Ophthalmol (Copenh)* 1989; **67:** 181–3.
3. Condon PI, *et al.* Double blind, randomised, placebo controlled, crossover, multicentre study to determine the efficacy of a 0.1% (w/v) sodium hyaluronate solution (Fermavisc) in the treatment of dry eye syndrome. *Br J Ophthalmol* 1999; **83:** 1121–4.
4. Shimmura S, *et al.* Sodium hyaluronate eyedrops in the treatment of dry eyes. *Br J Ophthalmol* 1995; **79:** 1007–11.
5. Aragona P, *et al.* Long term treatment with sodium hyaluronate-containing artificial tears reduces ocular surface damage in patients with dry eye. *Br J Ophthalmol* 2002; **86:** 181–4.

Osteoarthritis. In osteoarthritis, the size and concentration of hyaluronic acid molecules naturally present in synovial fluid is reduced. Thus, one approach in the management of osteoarthritis (p.11) of the knee is viscosupplementation of the synovial fluid by the intra-articular injection of hyaluronic acid or its derivatives. Such injections may reduce pain over 1 to 6 months but may be associated with a short-term increase in knee inflammation; there is some suggestion that any benefit is longer lasting than with intra-articular corticosteroids. Some studies suggest that viscosupplementation may be an effective option for patients who are unable to take oral NSAIDs or have regular intra-articular corticosteroids, and who are unsuitable candidates for joint replacement surgery, although there appears to be considerable variability in clinical response between products, as well as in the variables being assessed and length of treatment.

References.

1. Altman RD, Moskowitz R. Intraarticular sodium hyaluronate (Hyalgan) in the treatment of patients with osteoarthritis of the knee: a randomized clinical trial. *J Rheumatol* 1998; **25:** 2203–12. Correction. *ibid.* 1999; **26:** 1216.
2. Anonymous. Hyaluronan or hylans for knee osteoarthritis? *Drug Ther Bull* 1999; **37:** 71–2.
3. Huskisson EC, Donnelly S. Hyaluronic acid in the treatment of osteoarthritis of the knee. *Rheumatology (Oxford)* 1999; **38:** 602–7.
4. Wobig M, *et al.* The role of elastoviscosity in the efficacy of viscosupplementation for osteoarthritis of the knee: a comparison of hylan G-F 20 and a lower-molecular-weight hyaluronan. *Clin Ther* 1999; **21:** 1549–62.
5. Felson DT, Anderson JJ. Hyaluronate sodium injections for osteoarthritis: hope, hype, and hard truths. *Arch Intern Med* 2002; **162:** 245–7.
6. Lo GH, *et al.* Intra-articular hyaluronic acid in treatment of knee osteoarthritis: a meta-analysis. *JAMA* 2003; **290:** 3115–21.
7. Bellamy N, *et al.* Viscosupplementation for the treatment of osteoarthritis of the knee. Available in The Cochrane Database of Systematic Reviews; Issue 2. Chichester: John Wiley; 2006 (accessed 09/05/06).

Wound healing. Hyaluronic acid has been used to aid wound healing,[1,2] the overall management of which is discussed on p.1585.

1. Soldati D, *et al.* Mucosal wound healing after nasal surgery: a controlled clinical trial on the efficacy of hyaluronic acid containing cream. *Drugs Exp Clin Res* 1999; **25:** 253–61.
2. Harris PA, *et al.* Use of hyaluronic acid and cultured autologous keratinocytes and fibroblasts in extensive burns. *Lancet* 1999; **353:** 35–6.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Aquify; Artflex; Dropstar; Gengigel; Hialudorf; Hyalart†; Hyasol; Iuronicoderm; Lacripharma†; Maxiostenil; Miniostenil; Provisc; Synvisc; ***Austral.:*** AMO Vitrax; Fermathron†; Healon; Ophthalin; Provisc; Synvisc; Vismed†; ***Austria:*** Artzal; Connettivina; Etamucin; Hyalgan; ***Belg.:*** Gengigel; Healon†; Hyalgan; ***Braz.:*** Healon; Hyaludermin; Polireumin; Suprahyal; Synvisc; ***Canad.:*** Biolon†; Cystistat; Eyestil†; Healon†; Hyalgan; Hyalofill†; NeoVisc; Orthovisc; Suplasyn; Synvisc; ***Chile:*** Biolon; Eucerin Emulsion; Healon; Hyalgan; Lagricel Ofteno; Suprahyal; Synvisc; Toptear; ***Cz.:*** Curasan†; Healon†; Hyalgan; ***Denm.:*** Artz; Hyalgan; ***Fin.:*** Artzal; Healon†; Hyalgan; ***Fr.:*** Adant; Arthrum H; Effidia; Hyabak; Hyal-Drop; Hyalgan; Hyalofemme; Hyalofill; Hyalugel; Hylo-COMOD; Hyluprotect; Ialuset; Osteni; Provisc; Sinovial; Suplasyn; Synvisc; Vismed†; ***Ger.:*** Arthrease†; Biolan; Biolon; Dispasan; Endogel; Fermathron; Gelbag; Go-On; Healon†; Hy-GAG; Hya-ject; Hya-Ophtal†; Hyal-System†; Hyalart; Hyalubrix; Hylaform†; Hylan; Hylo-COMOD; Hylo-Vision; Hysan; Laservis; Orthovisc; Ostenil; Oxyal; Provisc; Suplasyn; Synvisc; TwinVisc; Viscoseal; Visiol; Vislube; Vismed; VisThesia; Xidan EDO; ***Gr.:*** Hyalart; ***Hong Kong:*** Connettivina; Go-On; Healon; Hialid; Hyalgan; Hyruan; Provisc†; Vismed; ***Hung.:*** Curiosin; Healon†; Hyalgan; Ial†; Ophthalin†; Provisc†; ***India:*** Halonix; Lghyal; Synvisc; Visial; ***Indon.:*** Adant; Durolane; Hialid; Hyalgan; Osflex; Suplasyn; ***Irl.:*** Hyalgan; Ophthalin†; Provisc†; Suplasyn; ***Israel:*** Adant; Arthrease; Biolon; Curavisc; Eyecon; Healon; Hylo-COMOD; Hysan; Ophthalin; Orthovisc; Suplasyn; Synvisc†; ***Ital.:*** Artz; Connettivina; Dropstar; Durolane; Go-On; Hy-Drop; Hyabak; Hyalart; Hyalgan; Hyalistil; Hylo-COMOD; Hyluprotect; Ial; Ialect†; Ialum; Ialurex; Inilens; Ocustil†; Ophtalin; Oxyal; Provisc; Synocrom; Synvisc; Vismed; ***Jpn:*** Hyalein; Suvenyl; ***Malaysia:*** Curiosin; Gengigel; Go-On; Healon†; Hyal; Hyalgan; Hyruan; Laservis†; Provisc; Sinovial; Synvisc; Viscoseal; Visiol; Vislube; Vismed; ***Mex.:*** Biolon; Hyasol; Lagricel; Suprahyal; Synvisc; Zonaker; ***Mon.:*** Oxyal; ***NZ:*** AMO Vitrax†; Healon; Hylaform; Ophthalin; Provisc; Synvisc; ***Philipp.:*** Hialid; Provisc; ***Pol.:*** Hyalgan; Synvisc; ***Port.:*** Artz; Gengigel†; Hyalart; Hyalofill†; Hylo-COMOD†; ***Rus.:*** Curiosin (Куриозин); Healon (Хеалон)†; Hylo-COMOD (Хило-КОМОД); ***S.Afr.:*** AMO Vitrax; Biolon; Biolone; Healon; Provisc; ***Singapore:*** AMO Vitrax†; Healon†; Hialid; Hyalgan; Hylaform; Provisc; Restylane†; Suplasyn; Synvisc; ***Spain:*** Hyalart; Hyalgan; ***Swed.:*** Artzal; Hyalgan; Synvisc; ***Switz.:*** Fermavisc; Healon†; Hyal-Drop; HycoSan5; Hylo-COMOD; Hysan; Ial; Ialugen; Laservis; Ostenil; Rhinogen; Sinovial; Suplasyn; Synvisc; Viscoseal; Visiol; Vislube; Vismed; ***Thai.:*** Adant; Connettivina†; Healon†; Hialid; Hyalgan; Hyruan; Ial; Ophthalin; Provisc; Synvisc; ***Turk.:*** Adant; Amvisc; Biolon; Healon; Hyalgan; Ial; Ophtalin Plus; Ostenil; Provisc; Synvisc; ***UK:*** Arthrease; Cystistat; Euflexxa; Fermathron; Gengigel; Healonid†; Hyabak; Hyalgan; Hyalofill; Hycosan; Ophthalin; Optrex Contact Lens Friendly Eye Drops; Orthovisc; Ostenil; Supartz†; Suplasyn; Synocrom; Synvisc; Viscoseal; ***USA:*** AMO Vitrax; Amvisc; Bionect; Coease; Euflexxa; Healon; Hyalgan; Hylaform; Hylira; Juvederm; Orthovisc; Perlane; Restylane; Shellgel; Supartz; Synvisc; ***Venez.:*** Healon†; Hyalgan; Lagricel Ofteno; Provisc†; Suprahyal; Synvisc; Toptear.

Multi-ingredient: ***Arg.:*** Blink Contacts; Cellskinlab Hydragel B5; Cremisona†; Culuflex H; Epitheliale AH; Estri-Atlas; Hyalcrom; Hyalcrom NF; Hyanac†; Hydratone†; Ingebrax; Iuronico Biotic; Lacrimax; Maxilac; Maxus; Muvar; Panoxi; Timed 0.5; Viscoat; Vita-C Derms's; Yusin Tears II; ***Austral.:*** Blink Contacts; Duovisc; Viscoat; ***Belg.:*** Physiologica; ***Chile:*** Hydrating B5 Gel; Ureadin Rx RD; ***Cz.:*** Curiosin†; Ialugen Plus; ***Fr.:*** Cicaplast; Cicatridine; Hyalogran; Hyarhinol; Ialuset Plus; Mucogyne; Saugella; Tonimer; Viscoat; ***Ger.:*** Duovisc; Hylo-Care; Viscoat; ***Hong Kong:*** Duovisc†; Viscoat†; ***Hung.:*** Ialugen Plus; Viscoat†; ***Israel:*** Aphtagone; Aptha-X; Gelclair†; ***Ital.:*** Altergen; Connettivina Plus; Dropyal; Idroskin C; Migel; Osmogel; Sirmiogel†; Trofo 5; Viscoat; ***Malaysia:*** Duovisc; Viscoat; ***Mex.:*** Cetopic; Emolin Neo; Grimal; Hyalcrom NF; Hyalox; ***Mon.:*** Monasens; ***NZ:*** Viscoat; ***Philipp.:*** Viscoat; ***Port.:*** Synchrorose; Synchrovit; ***Rus.:*** Hylozar-COMOD