used for dry eye (p.2140) and in contact lens solutions (p.1622). For dry eye it is often used in a concentration of 1.4% with or without povidone.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Bio Tears; Lagrima Artificial; Lagrima Humectante†; Lentisol; Lersan; Liquifilm Lagrimas†; Natura Wet; Total Solucion; ***Austral.:*** Liquifilm; PVA†; ***Belg.:*** Liquifilm; ***Braz.:*** Duracare†; Lacril; Totalens†; ***Canad.:*** Artificial Tears; Hypotears; Liquifilm; Optilube PVA; Scheinpharm Artificial Tears†; Total†; ***Chile:*** Lagrimas Artificiales; Liquifilm Lagrimas†; Visidic; ***Cz.:*** Liquifilm†; ***Denm.:*** Lacril; ***Fin.:*** Liquifilm; Oftan; ***Ger.:*** Lacrimal†; Liquifilm; Vistil; ***Gr.:*** Liquifilm Tears; ***Hong Kong:*** Liquifilm; PMS-Artificial Tears; ***Hung.:*** Humalac A and C; ***India:*** Aquatears; ***Indon.:*** Optifresh; ***Irl.:*** Liquifilm; Sno Tears; ***Israel:*** Hypotears†; Liquifilm Tears; ***Ital.:*** Lacrilux; Vistil; ***Malaysia:*** Liquifilm†; ***Mex.:*** Acuafil Ofteno; Lubrik; ***Norw.:*** Ocufri; ***NZ:*** Liquifilm; ***Pol.:*** Lacrimal; ***Port.:*** Liquifilm; ***S.Afr.:*** Liquifilm Tears; ***Singapore:*** Hypotears; Liquifilm Tears; ***Spain:*** Hypo Tears; Liquifilm Lagrimas; ***Swed.:*** Sincon; ***Switz.:*** Liquifilm†; Liquitears; ***Thai.:*** Liquifilm Tears; ***Turk.:*** Liquifilm; ***UK:*** Liquifilm Tears; Refresh; Sno Tears; ***USA:*** Akwa Tears; Dry Eyes; Liquifilm; Nu-Tears; Ocu-Tears; Puralube; Tears Again; ***Venez.:*** Acuafil Ofteno; Lacril.

Multi-ingredient: ***Arg.:*** Consil; Latlas; Panoptic Lagrimas; Refresh Free†; Soquette; ***Austral.:*** Murine Revital Eyes; Murine Tears for Eyes; Refresh; Tears Plus; ***Austria:*** Siccaprotect; ***Braz.:*** Refresh; ***Canad.:*** Artificial Tears Extra; Artificial Tears Plus; Murine; Refresh; Scheinpharm Artificial Tears Plus†; Teardrops; Tears Plus; ***Chile:*** Red Off Aqua; ***Cz.:*** Siccaprotect; ***Fr.:*** Refresh; ***Ger.:*** Dispatenol; Lacrimal OK; Liquifilm OK; Siccaprotect; ***Gr.:*** Onufrid; Refresh; ***Hong Kong:*** Hypotears; ***India:*** I-Lube; ***Israel:*** Refresh; ***Ital.:*** Collyria†; Hypotears; ***Malaysia:*** Hypotears; Murine NTF†; Murine Plus†; Refresh†; ***Mex.:*** Lagrifilm Plus; Soltrictor con Lagrifilm; ***Neth.:*** Tears Plus; ***NZ:*** Refresh; Tears Plus†; ***S.Afr.:*** Refresh; Tears Plus; ***Singapore:*** Refresh†; ***Spain:*** Liquifresh; ***Switz.:*** Collylarm; Hypotears; Siccaprotect; Tears Plus†; ***Thai.:*** Refresh; ***Turk.:*** Refresh; Siccaprotect; ***UK:*** Blink; Hypotears†; ***USA:*** Hypotears; Murine; Murine Plus; Nu-Tears II; Refresh Classic; Tears Plus; VasoClear†.

Povidone *(BAN, USAN, rINN)*

E1201; Polivinilpirolidon; Polyvidone; Polyvidonum; Polyvinylpyrrolidone; Povidon; Povidona; Povidonas; Povidoni; Povidonum; Powidon; PVP; Vinylpyrrolidinone Polymer. Poly (2-oxopyrrolidin-1-ylethylene).

Повидон

$(C_6H_9NO)_n$.

CAS — 9003-39-8.
ATC — A07BC03.
ATC Vet — QA07BC03.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Int.*, *Jpn*, and *US*.
Ph. Eur. 6.2 (Povidone). Linear polymers of 1-ethenylpyrrolidin-2-one. The different types of povidone are characterised by their viscosity in solution. A white or yellowish-white, hygroscopic powder or flakes. Freely soluble in water, in alcohol, and in methyl alcohol; very slightly soluble in acetone. A 5% solution in water has a pH of 3.0 to 7.0 depending on the viscosity. Store in airtight containers.
USP 31 (Povidone). A synthetic polymer consisting essentially of linear 1-vinyl-2-pyrrolidinone groups, the degree of polymerisation of which results in polymers of various molecular weights. The different types of povidone are characterised by their viscosity in aqueous solution, relative to that of water, expressed as a K-value. A white to slightly creamy-white, hygroscopic powder. Freely soluble in water, in alcohol, and in methyl alcohol; slightly soluble in acetone; practically insoluble in ether. pH of a 5% solution in water is between 3.0 and 7.0. Store in airtight containers.

Copovidone

Copolyvidone; Copolyvidonum; Copovidona; Copovidonum; Kopovidon; Kopovidonas; Kopovidoni.

ATC — A07BC03.
ATC Vet — QA07BC03.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF*.
Ph. Eur. 6.2 (Copovidone). A copolymer of 1-vinylpyrrolidin-2-one and vinyl acetate in the mass proportion 3:2. A white or yellowish-white, hygroscopic powder or flakes. Freely soluble in water, in alcohol, and in dichloromethane. Protect from moisture.
USNF 26 (Copovidone). A copolymer of 1-vinyl-2-pyrrolidone and vinyl acetate in a mass proportion of 3:2. A white to yellowish-white, hygroscopic, powder or flakes. Freely soluble in water, in alcohol, and in dichloromethane; practically insoluble in ether. Store in airtight containers.

Crospovidone *(BAN, rINN)*

Crospovidona; Crospovidonum; Krospovidon; Krospovidonas; Krospovidoni; Kroszpovidon; Polyplasdone XL.

Кросповидон

CAS — 9003-39-8.
ATC — A07BC03.
ATC Vet — QA07BC03.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF*.
Ph. Eur. 6.2 (Crospovidone). A cross-linked homopolymer of 1-vinylpyrrolidin-2-one. A white or yellowish-white, hygroscopic powder or flakes. Practically insoluble in water, in alcohol, and in dichloromethane. Protect from moisture.
USNF 26 (Crospovidone). A synthetic cross-linked homopolymer of *N*-vinyl-2-pyrrolidinone. A white to creamy-white, hygroscopic powder having a faint odour. Insoluble in water and in ordinary organic solvents. pH of a 1% suspension in water is between 5.0 and 8.0. Store in airtight containers.

Adverse Effects

Some products intended for parenteral use contain povidone as an excipient and injection has led to deposition of povidone in the tissues with consequent lesions and pain. There have been occasional reports of liver involvement.

◊ Reviews of adverse effects associated with pharmaceutical excipients including povidone.

1. Golightly LK, *et al.* Pharmaceutical excipients: adverse effects associated with 'inactive ingredients' in drug products (part II). *Med Toxicol* 1988; **3:** 209–40.

Hypersensitivity. For reference to anaphylaxis caused by the povidone component of povidone-iodine, see p.1659.

Uses and Administration

Povidone is used in pharmaceutical manufacturing as a suspending and dispersing agent and as a tablet binding, granulating, and coating agent. It is used as a carrier for iodine (see Povidone-Iodine, p.1659). An insoluble cross-linked form of povidone known as crospovidone is used as a tablet disintegrant. Copovidone, a copolymer with vinyl acetate, is used as a tablet binding and coating agent.

Povidone is included in artificial tears preparations used in the management of dry eye (p.2140) and in solutions for contact lens care (p.1622). For dry eye it is often used in a concentration of 0.6% with other viscosity-increasing agents (such as polyvinyl alcohol); it may also be used alone in solutions containing 1.5 to 5%.

Povidone has also been used as an adsorbent in gastrointestinal disorders.

Povidone was formerly used as a plasma expander but other compounds are now preferred.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Hypotears Plus; Megatears†; Sol-O-Flex; ***Austral.:*** In A Wink Moisturing†; Rohto Zi Fresh†; Spray-on Bande†; ***Austria:*** Oculotect; Protagent; ***Belg.:*** Oculotect; Siccagent; ***Braz.:*** Hypotears Plus; ***Chile:*** Lepex; Oculotec; ***Cz.:*** Arufil; Hypotears Plus; ***Denm.:*** Oculac; ***Fin.:*** Oculac; ***Fr.:*** Bolinan; Dulcilarmes; Fluidabak; Larmecran; Nu-Gel†; Nutrivisc; Unifluid; ***Ger.:*** Aloclair; Arufil; Lacophtal; Lacri-Stulln; Oculotect Fluid; Protagent; Vidirakt S; Vidisept; Wet-COMOD; Yxin Tears; ***Gr.:*** Oculotect; Protagent; ***Hong Kong:*** Hypotears Plus; Protagent; ***Hung.:*** Arufil; Oculotect; ***Israel:*** Hypotears E; Lacrimol; ***Ital.:*** Clarover; Nu-Gel; Protagent†; Wet-COMOD; ***Malaysia:*** Oculotect; Vidisept N†; ***Mex.:*** Hypotears Plus; Logical; Renu Plus; ***Neth.:*** Duratears Free; Oculotect; Protagens; Vidisic PVP; ***Norw.:*** Oculac; ***Philipp.:*** Oculotect; Vidisept N; ***Pol.:*** Oculotect; Vidisept; ***Port.:*** Oculotect; ***Rus.:*** Vid-COMOD (Вид-КОМОД); ***S.Afr.:*** Hypotears; ***Singapore:*** Oculotect; Vidisept N; ***Spain:*** Oculotect; ***Swed.:*** Oculac; ***Switz.:*** Oculac; Protagent; ***Thai.:*** Hypotears Plus; ***Turk.:*** Oculotect; Protagent; ***UK:*** Aloclair; Oculotect; ***Venez.:*** Hipotears Plus†; Hypotears Plus.

Multi-ingredient: ***Arg.:*** Maxilac; Panoptic Lagrimas; Refresh Free†; Visine Plus; ***Austral.:*** Murine Revital Eyes; Murine Tears for Eyes; Refresh; Tears Plus; Visine Advanced Relief; ***Austria:*** Lacrisic; ***Braz.:*** Refresh; ***Canad.:*** Artificial Tears Extra; Artificial Tears Plus; Moisture Drops†; Murine; Refresh; Scheinpharm Artificial Tears Plus†; Teardrops; Tears Plus; Visine Advance Triple Action; ***Fr.:*** Poly-Karaya; Refresh; ***Ger.:*** Lacrimal OK; Lacrisic; Liquifilm OK; Visine Trockene Augen; ***Gr.:*** Onufrid; Refresh; ***India:*** I-Lube; ***Israel:*** Aphtagone; Aptha-X; Gelclair†; Refresh; V-Crima; ***Ital.:*** Filmabak; ***Malaysia:*** Murine NTF†; Murine Plus†; Refresh†; ***Mex.:*** Lagrifilm Plus; Soyaloid; Soydex; Visine Extra; ***Neth.:*** Tears Plus; ***NZ:*** Refresh; Tears Plus†; Visine Advanced Relief; ***Rus.:*** Gluconeodesum (Глюконеодез); Haemodez-N (Гемодез-Н); ***S.Afr.:*** Moisture Drops†; Refresh; Tears Plus; ***Singapore:*** Refresh†; ***Spain:*** Liquifresh; ***Switz.:*** Collylarm; Tears Plus†; ***Thai.:*** Refresh; ***Turk.:*** Refresh; ***UK:*** Gelclair; ***USA:*** Advanced Relief Visine; Gelclair; Murine; Murine Plus; Refresh Classic; Tears Plus.

Silicas

Silice.

Purified Siliceous Earth

Diatomaceous Earth; Diatomite; Purified Infusorial Earth; Purified Kieselguhr; Terra Silicea Purificada; Tierra de diatomeas; Ziemia okrzemkowa.

CAS — 7631-86-9.

Pharmacopoeias. In *USNF*.
USNF 26 (Purified Siliceous Earth). A form of silicon dioxide consisting of frustules and fragments of diatoms purified by calcining. A very fine, white, light grey, or pale buff mixture of amorphous powder and lesser amounts of crystalline polymorphs, including quartz and cristobalite. It is gritty and readily absorbs moisture, and retains about four times its weight of water before becoming fluid. Insoluble in water, in acids, and in dilute solutions of alkali hydroxides.

Silicon Dioxide

Colloidal Hydrated Silica; E551; Kiseldioxid, kolloidal, hydratiserad; Koloidinis silicio dioksidas, hidratuotas; Oxid křemičitý koloidní hydratovaný; Piidioksidi, kolloidinen, hydratoitu; Precipitated Silica; Silica colloidalis hydrica; Silica Gel; Silice colloïdale hydratée; Silicio, dióxido de; Víztartalmú, kolloid szilicium-dioxid.

$SiO_2.xH_2O$ = 60.08 (anhydrous).

CAS — 63231-67-4; 7631-86-9.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF*. *Eur.* and *USNF* also include dental-type silica.
Ph. Eur. 6.2 (Silica, Colloidal Hydrated). A light, fine, white or almost white, amorphous powder. Practically insoluble in water, and in mineral acids except hydrofluoric acid; dissolves in hot solutions of alkali hydroxides.
Ph. Eur. 6.2 (Silica, Dental Type). An amorphous silica (precipitated, gel, or obtained by flame hydrolysis). A white or almost white, light, fine amorphous powder. Practically insoluble in water and in mineral acids; dissolves in hydrofluoric acid and in hot solutions of alkali hydroxides.
USNF 26 (Silicon Dioxide). It is obtained by insolubilising the dissolved silica in sodium silicate solution. Where obtained by the addition of sodium silicate to a mineral acid, the product is termed silica gel; where obtained by the destabilisation of a solution of sodium silicate in such a manner as to yield very fine particles, the product is termed precipitated silica. A fine, white, odourless, hygroscopic, amorphous powder in which the diameter of the average particles ranges from 2 to 10 micrometres. Insoluble in water, in alcohol, and in other organic solvents; soluble in hot solutions of alkali hydroxides. pH of 5% slurry in water is between 4.0 and 8.0. Store in airtight containers. Protect from moisture.
USNF 26 (Dental-Type Silica). It is obtained from sodium silicate solution by destabilising with acid in such a way as to yield very fine particles. A fine, white, odourless, hygroscopic, amorphous powder in which the diameter of the average particles ranges from 0.5 to 40 micrometres. Insoluble in water, in alcohol, and in acid (except hydrofluoric acid); soluble in hot solutions of alkali hydroxides. pH of 5% slurry in water is between 4.0 and 8.5. Store in airtight containers.

Colloidal Silicon Dioxide

Acidum Silicicum Colloidale; Colloidal Anhydrous Silica; Colloidal Silica; Hochdisperses Silicumdioxid; Kiseldioxid, kolloidal, vattenfri; Koloidinis silicio dioksidas, bevandenis; Krzemu dwutlenek koloidalny; Oxid křemičitý koloidní bezvodý; Piidioksidi, kolloidinen, vedetön; Silica colloidalis anhydrica; Silice colloïdale anhydre; Silicii Dioxidum Colloidalle; Silicio coloidal, dióxido de; Vízmentes, kolloid, szilicium-dioxid.

SiO_2 = 60.08.

CAS — 7631-86-9.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF*.
Eur. and *USNF* also include hydrophobic colloidal silica.
Ph. Eur. 6.2 (Silica, Colloidal Anhydrous). A light, fine, white or almost white, amorphous powder. It has a particle size of about 15 nm. Practically insoluble in water and in mineral acids except hydrofluoric acid; dissolves in hot solutions of alkali hydroxides. A 3.3% suspension in water has a pH of 3.5 to 5.5.
Ph. Eur. 6.2 (Silica, Hydrophobic Colloidal; Silica Hydrophobica Colloidalis). Colloidal silicon dioxide partly alkylated for hydrophobation. A light, fine, white or almost white, amorphous powder, not wettable by water. Practically insoluble in water and mineral acids except hydrofluoric acid. It dissolves slowly in hot solutions of alkali hydroxides.
USNF 26 (Colloidal Silicon Dioxide). A submicroscopic fumed silicon dioxide, prepared by the vapour-phase hydrolysis of a silicon compound. A light, white, non-gritty powder of extremely fine particle size (about 15 nm). Insoluble in water and in acid (except hydrofluoric acid); soluble in hot solutions of alkali hydroxides. pH of a 4% dispersion in water is between 3.5 and 5.5.
USNF 26 (Hydrophobic Colloidal Silica). Prepared by partial alkylation for hydrophobation. A light, fine, white or almost white, amorphous powder, not wettable by water. Practically insoluble in water and in mineral acids, except hydrofluoric acid; dissolves slowly in hot solutions of alkali hydroxides.

Adverse Effects

Prolonged inhalation of some forms of silica dust may be associated with the development of fibrosis of the lung (silicosis). The forms of silica described here and used as pharmaceutical excipients may cause irritation of the respiratory tract if inhaled but do not appear to be associated with silicosis.

Uses

The different forms of silica have various pharmaceutical uses. Purified siliceous earth is used as a filtering medium and adsorbent. Silicon dioxide is used as a suspending and thickening agent and, in the form of silica gel, as a desiccant. Colloidal silicon dioxide is used as a suspending agent and thickener, as a stabiliser in emulsions, and as an anticaking agent and desiccant. Silicon dioxide is also used as an anticaking agent in the food industry.

Homoeopathy. Silicon dioxide has been used in homoeopathic medicines under the following names: Acidum silicicum; Silicea; Sil.

Preparations

Proprietary Preparations (details are given in Part 3)
Austral.: Celloids S 79; ***Cz.:*** Original Silicea Balsam†; ***Ger.:*** Entero-Teknosal; Gela†; Sklerosol N†; ***NZ:*** Biosil†; ***Rus.:*** Polysorb (Полисорб); ***UK:*** Aerosil.

Multi-ingredient: ***Austral.:*** Bio-Disc; Duo Celloids SCF; Duo Celloids SPS; Duo Celloids SSS; Silicic Complex†; ***Austria:*** CO Granulat; Kephalodoron; ***Chile:*** Cartilago T-500; Xeragel; ***Cz.:*** Acne Cream†; CO Granulat†; ***Fin.:*** Wicne; ***Fr.:*** Gelopectose; Topaal; Topalkan; ***Ger.:*** Aplona; CO Granulat†; Equisil N; Rosatum Heilsalbe; ***Gr.:*** Gastrovison†; ***Hong Kong:*** Disflatyl; ***Israel:*** Adinol; Kelo-Cote; ***Ital.:*** Lacalut; ***Malaysia:*** Rowarolan; ***NZ:*** Lamisil Odor Eze; ***Philipp.:*** BioSil; ***S.Afr.:*** Lotio Pruni Comp cum Cupro; ***Singapore:*** Disflatyl; ***Switz.:*** Acne Creme; Fissan†.

Sodium Starch Glycolate

Carboxyméthylamidon sodique; Carboxymethylamylum natricum; Glicolato sódico de almidón; Karboksymetyloskrobia sodowa; Karboximetilkeményítő-nátrium; Karboxymethylškrob sodná sůl; Natriumstärkelseglykolat; Natriumtärkkelysglykolaatti; Sodium Carboxymethyl Starch; Sodium Starch Glycollate; Starch Sodium Glycolate.

CAS — 9063-38-1.

Pharmacopoeias. In *Chin.* and *Eur.* (see p.vii). Also in *USNF.*

Ph. Eur. 6.2 (Sodium Starch Glycolate (Type A); Carboxymethylamylum Natricum A). The sodium salt of a cross-linked partly *O*-carboxymethylated potato starch. It contains 2.8 to 4.2% of sodium, calculated with reference to the substance washed with alcohol (80%) and dried. A fine, white or almost white, very hygroscopic, free-flowing powder. It forms a translucent suspension in water; practically insoluble in dichloromethane. pH of a 3.33% dispersion in water is 5.5 to 7.5. Store in airtight containers. Protect from light.

Ph. Eur. 6.2 (Sodium Starch Glycolate (Type B); Carboxymethylamylum Natricum B). The sodium salt of a cross-linked partly *O*-carboxymethylated potato starch. It contains 2.0 to 3.4% of sodium, calculated with reference to the substance washed with alcohol (80%) and dried. A fine, white or almost white, very hygroscopic, free-flowing powder. It forms a translucent suspension in water; practically insoluble in dichloromethane. pH of a 3.33% dispersion in water is 3.0 to 5.0. Store in airtight containers. Protect from light.

Ph. Eur. 6.2 (Sodium Starch Glycolate (Type C); Carboxymethylamylum Natricum C). The sodium salt of a cross-linked by physical dehydration, partly *O*-carboxymethylated starch. It contains 2.8 to 5.0% of sodium, calculated with reference to the substance washed with alcohol (80%) and dried. A fine, white or almost white, very hygroscopic, free-flowing powder. It forms a translucent gel-like product in water; practically insoluble in dichloromethane. pH of a 3.33% gel in water is 5.5 to 7.5. Store in airtight containers. Protect from light.

USNF 26 (Sodium Starch Glycolate). The sodium salt of a carboxymethyl ether of starch or of a cross-linked carboxymethyl ether of starch. It may contain not more than 7.0% of sodium chloride. The sodium content is 2.8 to 4.2% (Type A) or 2.0 to 3.4% (Type B). pH of a 1 g in 30 mL suspension in water is between 5.5 and 7.5 (Type A) or between 3.0 and 5.0 (Type B).

A white, odourless, relatively free-flowing powder available in several different viscosity grades. A 2% dispersion in cold water settles, on standing, in the form of a highly hydrated layer. Protect from wide variations in temperature and humidity which may cause caking.

Uses

Sodium starch glycolate is used as a disintegrating agent in tablet manufacture.

Tragacanth

Dragant; E413; Goma Alcatira; Goma de tragacanto; Gomme adragante; Gum Dragon; Gum Tragacanth; Trag.; Tragacanta; Tragacantha; Tragacanto; Tragakanta; Tragakantas; Tragant; Tragantti.

CAS — 9000-65-1.

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

Ph. Eur. 6.2 (Tragacanth). The air-hardened gummy exudation flowing naturally or obtained by incision from the trunk and branches of *Astragalus gummifer* and some other species of *Astragalus* (Leguminosae) from western Asia. It occurs as thin, flattened, ribbon-like, white or pale yellow, translucent, horny strips. When reduced to a powder it forms a mucilaginous gel with about ten times its weight of water. Protect from light.

USNF 26 (Tragacanth). The dried gummy exudation from *Astragalus gummifer* or other Asiatic species of *Astragalus* (Leguminosae). It occurs as odourless, flattened, lamellated, frequently curved fragments or straight or spirally twisted linear pieces. It is white to weak yellow, translucent, and horny in texture. Powdered tragacanth is white to yellowish-white.

Adverse Effects

Hypersensitivity reactions, sometimes severe, have occurred rarely after the ingestion of products containing tragacanth. Contact dermatitis has been reported following the external use of tragacanth.

Uses

Tragacanth forms viscous solutions or gels with water, depending on the concentration. It is used in pharmaceutical manufacturing as a suspending agent and as an emulsifying agent. In dispensing aqueous preparations of tragacanth, the powdered tragacanth is first dispersed in a wetting agent, such as alcohol, to prevent agglomeration on the addition of water.

Tragacanth is also used for similar purposes in the food industry.

Xanthan Gum

Corn Sugar Gum; E415; Goma de xantána; Gomme xanthane; Ksantaanikumi; Ksantano lipai; Polysaccharide B 1459; Xantán gumi; Xantangummi; Xantham Gum; Xanthani gummi; Xanthanová klovatina.

CAS — 11138-66-2.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF.*

Ph. Eur. 6.2 (Xanthan Gum). A gum produced by fermentation of a carbohydrate with *Xanthomonas campestris* and purified. It is the sodium, potassium, or calcium salt of a high-molecular-weight polysaccharide containing D-glucose, mannose, and glucuronic acid. It also contains not less than 1.5% of pyruvic acid, calculated with reference to the dried substance. A white or yellowish-white, free-flowing powder. Soluble in water giving a highly viscous solution; practically insoluble in organic solvents. A 1% solution in water has a pH of 6.0 to 8.0.

USNF 26 (Xanthan Gum). A high-molecular-weight polysaccharide gum produced by a pure-culture fermentation of a carbohydrate with *Xanthomonas campestris* and purified. It contains D-glucose, D-mannose, and D-glucuronic acid. It is prepared as the sodium, potassium, or calcium salt. A cream-coloured powder. Soluble in hot or cold water. Its solutions are neutral to litmus.

Uses

Xanthan gum is used in pharmaceutical manufacturing as a suspending, stabilising, thickening, and emulsifying agent. It is also used similarly in the food industry.

◊ Suspensions of crushed tablets or insoluble powders made with xanthan gum were reported to be preferable to those made with tragacanth.[1]

The stability was generally good and only a small number of drugs had been found to be incompatible (amitriptyline, tamoxifen, and verapamil).[1] For extemporaneous dispensing, a 1% solution of xanthan gum with hydroxybenzoate, prepared in advance, was diluted to 0.5% with water when preparing the suspension.

Xanthan gum was found to be a suitable suspending vehicle for delivering antispasmodics topically along the length of the oesophagus in patients with oesophageal spasm.[2] Coagulation of the gum had been observed when it was used for suspensions of certain film-coated tablets.

1. Anonymous. "Extremely useful" new suspending agent. *Pharm J* 1986; **237:** 665.
2. Evans BK, Fenton-May V. Keltrol. *Pharm J* 1986; **237:** 736–7.

Preparations

USNF 26: Xanthan Gum Solution.

Proprietary Preparations (details are given in Part 3)
Ger.: Ronfnyl; ***Malaysia:*** Ronfnyl†; ***Switz.:*** TenderWet†.

Multi-ingredient: ***Ital.:*** Resource Gelificata.