Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Ultrazyme; ***Austral.:*** Complete Protein Remover; Ultrazyme; ***Braz.:*** Fizziclean†; Ultrazyme†; ***Canad.:*** Complete Protein Remover†; Efferzyme†; Ultrazyme; Unizyme; ***NZ:*** Ultrazyme; ***USA:*** Renu Enzymatic Cleaner; Soft Mate Enzyme Plus Cleaner; Ultrazyme.

Multi-ingredient: ***Canad.:*** Comfortcare Dual Action†.

Sucrose Octa-acetate

Sacarosa, octaacetato de; Sucrose Octaacetate.
$C_{28}H_{38}O_{19}$ = 678.6.
CAS — 126-14-7.

Pharmacopoeias. In *USNF*.
USNF 26 (Sucrose Octaacetate). A white, practically odourless, hygroscopic powder. M.p. not lower than 78°. Soluble 1 in 1100 of water, 1 in 11 of alcohol, 1 in 0.3 of acetone, 1 in 0.5 of toluene, and 1 in 0.6 of benzene; very soluble in chloroform and in methyl alcohol; soluble in ether. Store in airtight containers.

Profile

Sucrose octa-acetate has been used as an alcohol denaturant. It is also incorporated into preparations intended to deter nail biting.

Preparations

Proprietary Preparations (details are given in Part 3)
Spain: Morde X.

Sulfobromophthalein Sodium

Bromsulfophthalein Sodium; Bromsulphthalein Sodium; BSP; SBP; Sodium Sulfobromophthalein; Sulfobromoftaleína sódica; Sulphobromophthalein Sodium *(BANM)*. Disodium 4,5,6,7-tetrabromophenolphthalein-3′,3″-disulphonate; Disodium 5,5′-(4,5,6,7-tetrabromophthalidylidene)bis(2-hydroxybenzenesulphonate).
$C_{20}H_8Br_4Na_2O_{10}S_2$ = 838.0.
CAS — 297-83-6 (sulfobromophthalein); 71-67-0 (sulfobromophthalein sodium).
ATC — V04CE02.
ATC Vet — QV04CE02.

Pharmacopoeias. In *Chin.*, *It.*, and *Jpn.*

Profile

In patients with normal hepatic function sulfobromophthalein sodium is rapidly extracted, conjugated, and excreted in bile. It was formerly used intravenously as a diagnostic agent for testing the functional capacity of the liver but may cause severe hypersensitivity reactions.

Sulfuric Acid

Acid. Sulph.; Acid. Sulph. Dil.; Acide sulfurique; Acidum sulfuricum; E513; Kénsav; Kwas siarkowy; Kyselina sírová; Oil of Vitriol; Rikkihappo; Sulfato rūgštis; Sulfúrico, ácido; Sulphuric Acid; Svavelsyra; Verdünnte Schwefelsäure (dilute sulfuric acid).
H_2SO_4 = 98.08.
CAS — 7664-93-9.

NOTE. Concentrated oil of vitriol of commerce, 'COV', contains about 95 to 98% w/w, and brown oil of vitriol, 'BOV', contains 75 to 85% w/w of H_2SO_4.
Nordhausen or fuming sulfuric acid, 'Oleum', is sulfuric acid containing SO_3.
Battery or accumulator acid is sulfuric acid diluted with distilled water to a specific gravity of 1.2 to 1.26.

Pharmacopoeias. *Br.* and *Eur.* (see p.vii) include various concentrations. Also in *USNF*.
BP 2008 (Dilute Sulphuric Acid). It contains 9.5 to 10.5% w/w of H_2SO_4 and is prepared by adding 104 g of sulfuric acid to 896 g of water, with constant stirring and cooling.
Ph. Eur. 6.2 (Sulphuric Acid). It contains 95.0 to 100.5% w/w of H_2SO_4. A colourless, very hygroscopic, oily liquid. Miscible with water and with alcohol producing intense heat. Store in airtight containers.
USNF 26 (Sulfuric Acid). It contains 95.0 to 98.0% w/w of H_2SO_4. A clear, colourless, oily liquid. Is very caustic and corrosive. Miscible with water and with alcohol with the generation of much heat. Store in airtight containers.

Dilution. When sulfuric acid is mixed with other liquids, it should always be added slowly, with constant stirring, to the diluent.

Adverse Effects and Treatment

As for Hydrochloric Acid, p.2322.

Uses and Administration

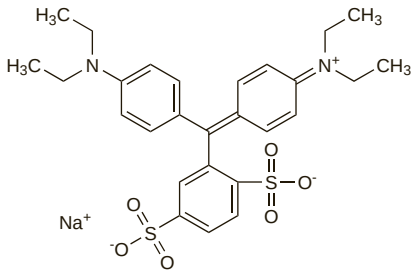
Sulfuric acid has various industrial uses. Dilute sulfuric acid has been used as an astringent in diarrhoea and it has occasionally been prescribed in mixtures with vegetable bitters to stimulate appetite.

Preparations

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

Sulphan Blue *(BAN)*

Azul sulfán; Błękit sulfanowy; Blue VRS; Isosulfan Blue *(USAN)*; P-1888; P-4125; Sulfan Blue. Sodium α-(4-diethylaminophenyl)-α-(4-diethyliminiocyclo-hexa-2,5-dienylidene)toluene-2,5-disulfonate.
$C_{27}H_{31}N_2NaO_6S_2$ = 566.7.
CAS — 68238-36-8 (2,5-disulfonate isomer); 129-17-9 (2,4-disulfonate isomer).



(2,5-disulfonate isomer)

NOTE. Sulphan blue was formerly described in *BPC 1954* as the 2,4-disulfonate isomer and the following synonyms have been applied to this 2,4-isomer: Acid Blue 1; Alphazurine 2G; Colour Index No. 42045; Patent Blue V; Sulphanum Caeruleum. The name Patent Blue V, however, is mainly used for CI No. 42051 (p.2363).

Profile

Intravenous doses of sulphan blue produce staining of the skin and have been used as a direct visual test of the state of the circulation in healthy and damaged tissues, particularly in assessing tissue viability in burns and soft-tissue trauma. It has also been used subcutaneously in lymphangiography to outline the lymph vessels.

Hypersensitivity reactions including anaphylaxis and attacks of asthma have been reported with sulphan blue. It has also been reported to interfere with blood tests for protein and iron.

Preparations

Proprietary Preparations (details are given in Part 3)
Canad.: Lymphazurin; ***USA:*** Lymphazurin.

Sumatra Benzoin

Benjoim; Benjoin; Benjoin de sumatra; Benjuí, bálsamo de; Benzoë; Benzoe sumatranus; Benzoin; Benzoina; Gum Benjamin; Gum Benzoin; Styrax tonkinensis et Styrax benzoin.
CAS — 9000-05-9.

Pharmacopoeias. In *Eur.* (see p.vii) and *Jpn*.
US allows both Siam benzoin and Sumatra benzoin under the title Benzoin.
Ph. Eur. 6.2 (Sumatra Benzoin). A resin obtained by incising the trunk of *Styrax benzoin*. It contains 25 to 50% of total acids, calculated as benzoic acid (dried drug).
Creamy white, rounded to ovoid tears, which may be embedded in a dull, greyish-brown or reddish-brown matrix. It is hard and brittle and the fractured surface is dull and uneven.
USP 31 (Benzoin). A balsamic resin from *Styrax parallelo neurus* or *S. benzoin* (Styracaceae). It yields not less than 75% of alcohol-soluble extractive. It occurs as blocks or lumps of variable size made up of tears, compacted together, with a reddish-brown, reddish-grey, or greyish-brown resinous mass. The tears are externally yellowish or rusty brown, milky white on fresh fracture, hard and brittle at ordinary temperatures but softened by heat. It has an aromatic and balsamic odour. When heated it does not emit a pinaceous odour. When digested with boiling water, the odour suggests cinnamates or storax.

Profile

Sumatra benzoin is an ingredient of inhalations which are used in the treatment of catarrh of the upper respiratory tract. Sumatra benzoin is also used in topical preparations for its antiseptic and protective properties. Skin sensitisation has been reported.

Preparations of Sumatra and Siam benzoins are used in aromatherapy.

Preparations

BP 2008: Benzoin Inhalation; Compound Benzoin Tincture;
BPC 1954: Compound Iodoform Paint;
Ph. Eur.: Benzoin Tincture, Sumatra;
USP 31: Compound Benzoin Tincture; Podophyllum Resin Topical Solution.

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Nappy-Mate†; ***Belg.:*** Borostyrol; ***Braz.:*** Inhadrina†; Inhalante Yatropan; Micoz†; ***Canad.:*** Cold Sore Lotion; Lotion pour Feux Sauvages†; ***Fr.:*** Balsofumine; Balsofumine Mentholee; ***Ger.:*** Nur 1 Tropfen medizinisches Mundwasser†; ***Israel:*** Kank-A; ***Ital.:*** Citrosil Nubesan; Fomentil; ***NZ:*** Cold Sore; ***Port.:*** Vaporil; ***S.Afr.:*** Turulington Tincture; ***Switz.:*** Baume†; Pommade au Baume; ***Turk.:*** Buguseptil; Rinolar; ***UK:*** Allens Dry Tickly Cough; Frador; Kilkof; Potters Strong Bronchial Catarrh Pastilles; Potters Sugar Free Cough Pastilles; Snowfire; Throaties Pastilles; ***USA:*** Pfeiffer's Cold Sore; ***Venez.:*** Áftil; Podoben†.

Summer Savory

Bohnenkraut; Sarriette; Savory.

Profile

Summer savory (*Satureja hortensis*, Lamiaceae) is included in herbal preparations and is used as a culinary herb.
It is the source of savory oil which is included in herbal preparations, mainly for the relief of cold symptoms. It is also used in aromatherapy.

Preparations

Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Austral.:*** Gartech; ***Fr.:*** Resistim; ***Spain:*** Natusor Astringel†; Natusor Low Blood Pressure†; Tonimax; ***Switz.:*** Demonatur Capsules contre les refroidissements; Spagyrom.

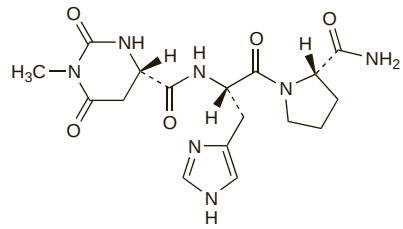
Surgibone *(USAN)*

Profile

Surgibone is sterile, specially processed mature bovine bone, that has been used for grafting procedures in orthopaedic and reconstructive surgery.

Taltirelin *(rINN)*

TA-0910; Taltirelina; Taltiréline; Taltirelinum. (–)-*N*-{[(*S*)-Hexahydro-1-methyl-2,6-dioxo-4-pyrimidinyl]carbonyl}-L-histidyl-L-prolinamide.
Тальтирелин
$C_{17}H_{23}N_7O_5$ = 405.4.
CAS — 103300-74-9.



Profile

Taltirelin is an analogue of protirelin (p.2175) and is claimed to have beneficial effects on CNS function. It is used in the treatment of spinocerebellar degeneration.

Preparations

Proprietary Preparations (details are given in Part 3)
Jpn: Ceredist.

Tannic Acid

Acide tannique; Acidum Tannicum; Gallotannic Acid; Garvsyra; Gerbstoff; Kwas taninowy; Tánico, ácido; Tanin; Tanina; Taninas; Tann. Acid; Tanniini (Parkkihappo); Tannin; Tanninum.
CAS — 1401-55-4.

NOTE. In pharmaceutical literature, the name digallic acid is frequently confused with tannic acid.
Commercial grades of tannic acid may contain gallic acid and being less soluble are not suitable for medicinal use.

Pharmacopoeias. In *Eur.* (see p.vii), *Jpn*, and *US*.
Ph. Eur. 6.2 (Tannic Acid). A mixture of esters of glucose with gallic acid and 3-galloylgallic acid. A yellowish-white or slightly brown amorphous light powder or shiny plates. Very soluble in water; freely soluble in alcohol, in acetone, and in glycerol (85%); practically insoluble in dichloromethane. Protect from light.
USP 31 (Tannic Acid). A tannin usually obtained from nutgalls (see Gall, p.2307), the excrescences produced on the young twigs of *Quercus infectoria* and allied species of *Quercus*, from the seed pods of tara (*Caesalpinia spinosa*), or from the nutgalls or leaves of sumac (any of genus *Rhus*).
Amorphous powder, glistening scales, or spongy masses, varying in colour from yellowish-white to light brown. Is odourless or has a faint, characteristic odour. Very soluble in water, in alcohol, and in acetone; freely soluble in diluted alcohol; slightly soluble in dehydrated alcohol; practically insoluble in chloroform, in ether, in petroleum spirit, and in benzene; soluble 1 in about 1 of warm glycerol. Store in airtight containers. Protect from light.

Profile

Tannic acid has been used as an astringent for the mucous membranes of the mouth and throat, and in suppositories for the treat-

ment of haemorrhoids. It is an ingredient in a number of dermatological preparations.

Former uses of tannic acid include application to burns, addition to barium sulfate enemas to improve the quality of radiological pictures of the colon, and as an ingredient of 'Universal Antidote'. However, tannic acid has been associated with liver toxicity, sometimes fatal.

Tattoo removal. Although tannic acid may be used by plastic surgeons and dermatologists to produce a controlled partial-thickness burn in tattoo removal[1] it has been pointed out that in unskilled or amateur hands this procedure has resulted in full thickness burns requiring skin grafting to obtain satisfactory healing.[2]

1. Mercer NSG, Davies DM. Tattoos. *BMJ* 1991; **303:** 380.
2. Scott M, Ridings P. Tattoos. *BMJ* 1991; **303:** 720.

Preparations

Proprietary Preparations (details are given in Part 3)

Ger.: Tannosynt; ***Spain:*** Tanagel Papeles.

Multi-ingredient: ***Austral.:*** SM-33; ***Austria:*** Haemanal; Paradenton; ***Belg.:*** Hemorrhinol; ***Braz.:*** Lacto Vagin†; ***Canad.:*** Tanac; ***Fr.:*** Allerbiocid S†; Eau Precieuse; HEC; ***Ger.:*** Biogetˆ; Tannolil†; ***Gr.:*** Oulogram; ***Irl.:*** Phytex; ***Israel:*** Rectozorin; ***Ital.:*** Blefarolin; Neo Emocicatrol; ***Philipp.:*** Zilactin; ***Pol.:*** Acifungin; Salumin; ***Rus.:*** Contraceptin T (Контрацептин Т); Neo-Anusol (Нео-анузол); ***Singapore:*** HEC†; ***Spain:*** Antihemorroidal; Depurativo Richelet; Dextricea; Sabanotropico; Tanagel; Tangenol†; ***Switz.:*** HEC; Tanno-Hermal; ***UK:*** Colsor; Phytex; TCP; ***USA:*** Dermasept Antifungal; Orasept; Outgro; Tanac; Tanac Dual Core.

Tansy

Atanasia; Barbotine; Hierba lombriguera; Rainfarn; Tanaceto; Tanaisie.

Profile

Tansy, the flowering tops of *Tanacetum vulgare* (*Chrysanthemum vulgare*) (Compositae), has been used as an anthelmintic and to stimulate menstruation. The oil is highly toxic and use of tansy is generally not recommended.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Calmo; ***Pol.:*** Artemisol.

Taraxacum

Dandelion Root; Diente de León; Korzeń mniszka (root); Löwenzahnwurzel; Pissenlit; Taraxaci Herba; Taraxaci Radix (root); Taraxacum officinalis; Taraxacum Root; Ziele mniszka.

Pharmacopoeias. In *Pol.*

Chin. specifies Taraxacum Herb from other species of *Taraxacum.*

Profile

Taraxacum is the fresh or dried root of the common dandelion, *Taraxacum officinale* (Compositae). It has been used as a bitter, as a diuretic, and as a mild laxative.

Homoeopathy. Taraxacum has been used in homoeopathic medicines under the following names: Taraxacum officinale; Tarax.

◊ References.

1. Houghton P. Bearberry, dandelion and celery. *Pharm J* 1995; **255:** 272–3.

Preparations

Proprietary Preparations (details are given in Part 3)

Cz.: Gallentee†; ***Ger.:*** Carvicum†; Taraleon†; ***Pol.:*** Talion.

Multi-ingredient: ***Arg.:*** Quelodin F; ***Austral.:*** Berberis Complex; Bioglan Cranbiotic Super; Colax; Digest; Extralife Fluid-Care; Extralife Liva-Care; Feminine Herbal Complex; Fluid Loss†; Glycoplex†; Herbal Cleanse†; Herbal Diuretic Formula†; Lifesystem Herbal Formula 7 Liver Tonic†; Liver Tonic Herbal Formula 6†; Livstim†; Livton Complex†; Profluid†; Silybum Complex†; St Mary's Thistle Plus; Trifolium Complex†; Uva-Ursi Complex†; Uva-Ursi Plus†; ***Austria:*** Gallen- und Lebertee St Severin; Magentee St Severin; Montana; Urelium Neu; ***Canad.:*** Milk Thistle Extract Formula†; ***Cz.:*** Cynarosan†; Diabetan; Diabeticka Cajova Smes-Megadiabetin; Original Schwedenbitter; The Salvat; Ungolen†; ***Fr.:*** Detoxell; Diacure; Drainuryl; Hydracur; Maxidraine†; Romarene; ***Ger.:*** Alasenn; Amara-Tropfen; Aristochol N†; Carmol Magen-Galle-Darm; Cholosom SL†; Cholosom-Tee; Gallemolan forte; Gallemolan G†; Gallexier; Galloselect M†; Neurochol C†; Nieron S†; Nieron-Tee N†; Pascobilin novo†; Presselin Hepaticum P†; Tonsilgon; ***Hong Kong:*** Hepatofalk; ***Indon.:*** Naturica DFM; ***Ital.:*** Centaurea (Specie Composta)†; Cinarepa; Tarassaco (Specie Composta)†; Varicofit; ***Malaysia:*** Dandelion Complex†; ***Pol.:*** Artecholin; Artecholwex; Cholavisol; Cholesol; Cholitol; Diabetosol; Dyspepsin; Gastrobonisol; Nefrobonisol; Nefrol; Tabletki Przeciw Niestrawnosci; ***Rus.:*** Tonsilgon N (Тонзилгон Н); ***S.Afr.:*** Amara; ***Spain:*** Diurette; ***Switz.:*** Boldocynara; Demonatur Gouttes pour le foie et la bile; Gastrosan; Heparfelien; Phytomed Hepato†; Phytomed Nephro†; Strath Gouttes pour les reins et la vessie; Tisane hepatique et biliaire; ***UK:*** Adios; Aqualette; Backache; Boldex; HealthAid Boldo-Plus; Herbulax; HRI Water Balance; Natravene; Natural Herb Tablets; Out-of-Sorts; Rheumatic Pain; Senokot Dual Relief; Stomach Mixture; Uvacin; Weight Loss Aid; Wind & Dyspepsia Relief; ***Venez.:*** Celyth's; Flocadep; Rheu-Tarx 1.

Tartaric Acid

Acide tartrique; Acidum tartaricum; Borkősav; E334; E353 (metatartaric acid); Kwas winowy; Kyselina vinná; Tart. Acid; Tartárico, ácido; Tartarik Asit; Tartrique (Acide); Viinihappo; Vinsyra; Vyno rūgštis; Weinsäure. (+)-L-Tartaric acid; (2*R*,3*R*)-2,3-Dihydroxybutane-1,4-dioic acid.

$C_4H_6O_6$ = 150.1.

CAS — 87-69-4; 526-83-0.

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

Ph. Eur. 6.2 (Tartaric Acid). A white or almost white, crystalline powder or colourless crystals. Very soluble in water; freely soluble in alcohol.

USNF 26 (Tartaric Acid). Colourless or translucent crystals or a white, fine to granular, crystalline powder. Is odourless. Soluble 1 in 0.8 of water, 1 in 0.5 of boiling water, 1 in 3 of alcohol, 1 in 250 of ether, and 1 in 1.7 of methyl alcohol.

Adverse Effects

Strong solutions of tartaric acid are mildly irritant and if ingested undiluted may cause violent vomiting and diarrhoea, abdominal pain, and thirst. Cardiovascular collapse or acute renal failure may follow.

Pharmacokinetics

Tartaric acid is absorbed from the gastrointestinal tract but up to 80% of an ingested dose is probably destroyed by micro-organisms in the lumen of the intestine before absorption occurs. Absorbed tartaric acid is excreted unchanged in the urine.

Uses and Administration

Tartaric acid is used in the preparation of effervescent powders, granules, and tablets, as an ingredient of cooling drinks, and as a saline purgative. If not neutralised, it must be taken well diluted. Tartaric acid or metatartaric acid are used in wine-making as deacidifying agents to assist in the removal of excess malic acid by forming an insoluble double salt with calcium carbonate.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Citralite; Citravescent; Dexsal; Salvital; Ural; Uricalm†; ***Austria:*** Duplotrast Weinsaure; Helo-acid; Lactolavol; ***Belg.:*** Zoru†; ***Canad.:*** E-Z-Gas II†; ***Chile:*** Frunalia; Frutasal Knop; Uroknop; ***Fr.:*** Dermacide; Zeniac LP Fort†; ***Ger.:*** Retterspitz Ausserlich; Retterspitz Innerlich; ***India:*** Urisoda; ***Ital.:*** Antimicotica Solforata; Geffer; Magnesia Effervescente Sella; ***Malaysia:*** Citravescent†; Ezee; Ural; ***NZ:*** Ural; ***Port.:*** Safrux; Thiospot; ***S.Afr.:*** Adco-Sodasol; Alkafizz; Citro-Soda; Quatro-Soda†; Uri-Alk; ***Spain:*** Citinoides; Hectonona; Salcedol; Sales de Frutas P G; Sales Fruta Mag Viviar; Salmagne; ***Switz.:*** Siesta-1; ***Turk.:*** Enhos; Purgyl; ***UK:*** Jaaps Health Salt; ***USA:*** Baros.

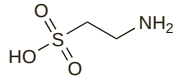
Taurine *(rINN)*

Taurina; Taurinum. 2-Aminoethanesulphonic acid.

Таурин

$C_2H_7NO_3S$ = 125.1.

CAS — 107-35-7.



Pharmacopoeias. In *Chin., Jpn,* and *US.*

USP 31 (Taurine). White crystals or crystalline powder. Soluble in water.

Profile

Taurine is an amino acid known to be involved in bile acid conjugation as well as other physiological functions. It has been included in preparations for parenteral nutrition of low-birthweight infants and in infant formulas but its role as an essential nutrient has not been established.

Taurine is included in some preparations for cardiovascular and metabolic disorders.

◊ References.

1. Redmond HP, *et al.* Immunonutrition: the role of taurine. *Nutrition* 1998; **14:** 599–604.
2. Militante JD, Lombardini JB. Treatment of hypertension with oral taurine: experimental and clinical studies. *Amino Acids* 2002; **23:** 381–93.
3. Bidri M, Choay P. La taurine : un aminoacide particulier aux fonctions multiples. *Ann Pharm Fr* 2003; **61:** 385–91.
4. Kingston R, *et al.* The therapeutic role of taurine in ischaemia-reperfusion injury. *Curr Pharm Des* 2004; **10:** 2401–10.
5. Franconi F, *et al.* Taurine supplementation and diabetes mellitus. *Curr Opin Clin Nutr Metab Care* 2006; **9:** 32–6.
6. Verner A, *et al.* Effect of taurine supplementation on growth and development in preterm or low birth weight infants. Available in The Cochrane Database of Systematic Reviews; Issue 4. Chichester: John Wiley; 2007 (accessed 25/06/08).

Preparations

Proprietary Preparations (details are given in Part 3)

Ital.: O-Due; ***Philipp.:*** Taurex; ***Rus.:*** Dibicor (Дибикор); Taufone (Тауфон)†.

Multi-ingredient: ***Indon.:*** Biofos; ***Ital.:*** Novostatin; ***Port.:*** Detoxergon; ***Spain:*** Taurobetina†.

Terlipressin *(BAN, USAN, rINN)*

Terlipresina; Terlipressine; Terlipressinum; Triglycyl-lysine-vasopressin. *N*-[*N*-(*N*-Glycylglycyl)glycyl]lypressin; Gly-Gly-Gly-Cys-Tyr-Phe-Gln-Asn-Cys-Pro-Lys-Gly-NH_2 cyclic (4→9) disulphide.

Терлипрессин

$C_{52}H_{74}N_{16}O_{15}S_2$ = 1227.4.

CAS — 14636-12-5.

ATC — H01BA04.

ATC Vet — QH01BA04.

Terlipressin Acetate *(BANM, rINNM)*

Acetato de terlipresina; Terlipresin Asetat; Terlipressiiniasetaatti; Terlipressin Diacetate; Terlipressinacetat; Terlipressine, Acétate de; Terlipressini Acetas.

Терлипрессина Ацетат

$C_{52}H_{74}N_{16}O_{15}S_2.2C_2H_4O_2.5H_2O$ = 1437.6.

ATC — H01BA04.

ATC Vet — QH01BA04.

Adverse Effects, Treatment, and Precautions

As for Vasopressin, p.2412.

The pressor and antidiuretic effects of terlipressin are reported to be less marked than those of vasopressin.

Effects on electrolytes. A report of hypokalaemia in a patient receiving terlipressin.[1]

1. Stéphan F, Paillard F. Terlipressin-exacerbated hypokalaemia. *Lancet* 1998; **351:** 1249–50.

Effects on the skin. Ischaemic skin necrosis developed in 3 patients several days after starting terlipressin treatment.[1] Skin lesions developed on the abdomen and lower limbs, which are not typical areas for ischaemia related to vasoconstrictors, and the authors concluded that obesity and venous insufficiency in these patients put them at particular risk.

1. Donnellan F, *et al.* Ischaemic complications of Glypressin in liver disease: a case series. *Br J Clin Pharmacol* 2007; **64:** 550–2.

Uses and Administration

Terlipressin is an inactive prodrug which is slowly converted in the body to lypressin, and has the general physiological actions of vasopressin (p.2412).

Terlipressin acetate is used to control bleeding oesophageal varices and is given by intravenous injection in doses of 2 mg, followed by 1 or 2 mg every 4 to 6 hours if necessary, until bleeding is controlled, for up to 72 hours.

Terlipressin is under investigation in the treatment of hepatorenal syndrome and shock.

Hepatorenal syndrome. Terlipressin has been found to be of benefit in the hepatorenal syndrome, a form of renal impairment associated with cirrhosis of the liver. A retrospective study[1] found that doses of about 3 mg/day for a mean of 11 days appeared to improve renal function in 58 of 91 patients; it may also have improved survival. Further prospective studies have also reported beneficial effects on renal function; these used doses of terlipressin 1 mg every 4 hours for 7 to 15 days,[2] and 1 mg every 12 hours for up to 15 days.[3] Meta-analysis[4] of 11 studies confirmed the efficacy of terlipressin in hepatorenal syndrome although a significant number of patients who responded to treatment relapsed after it was stopped. A systematic review[5] of 3 small randomised controlled studies of terlipressin suggested that it may reduce mortality and improve renal function in patients with hepatorenal syndrome, although the evidence was not sufficiently reliable to make recommendations for clinical practice.

1. Moreau R, *et al.* Terlipressin in patients with cirrhosis and type 1 hepatorenal syndrome: a retrospective multicenter study. *Gastroenterology* 2002; **122:** 923–30.
2. Alessandria C, *et al.* Renal failure in cirrhotic patients: role of terlipressin in clinical approach to hepatorenal syndrome type 2. *Eur J Gastroenterol Hepatol* 2002; **14:** 1363–8.
3. Solanki P, *et al.* Beneficial effects of terlipressin in hepatorenal syndrome: a prospective, randomized placebo-controlled clinical trial. *J Gastroenterol Hepatol* 2003; **18:** 152–6.
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Shock. Terlipressin has vasopressor effects and has been tried[1,2] in the management of septic shock (p.1183). In a group of 8 patients who could not be adequately managed with conventional vasopressor therapy, an intravenous bolus of terlipressin 1 to 2 mg produced a progressive increase in mean arterial pressure over 10 to 20 minutes that was sustained for at least 5 hours, allowing reduction or cessation of noradrenaline.[3] Similar beneficial results have also been reported by others.[4,5] The use of a continuous infusion of terlipressin (500 micrograms/hour for 6 hours followed by half this dose for a further 12 hours) has been described in one case and appeared to be effective.[6] There is also a report[7] of 4 children treated with bolus doses of 20 micrograms/kg every 4 hours for up to 72 hours.

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