## Colforsin Daropate Hydrochloride *(rINNM)*

Colforsin Dapropate Hydrochloride; Colforsine, Chlorhydrate de Daropate de; Colforsini Daropatis Hydrochloridum; Hidrocloruro del daropato de colforsina; NKH-477.

Колфорсина Даропата Гидрохлорид

$C_{27}H_{43}NO_8$,HCl = 546.1.

*CAS — 138605-00-2.*

### Profile

Colforsin is an adenylate cyclase stimulator derived from the plant *Plectranthus barbatus* (*Coleus forskohlii*) (Labiatae). It has been investigated for a number of conditions, including glaucoma and impotence. It is reported to have positive inotropic and bronchodilator effects. It has been used in the form of colforsin daropate hydrochloride.

### Preparations

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

## Collagen

Colágeno.

*ATC — B02BC07; G04BX11.*

*ATC Vet — QB02BC07; QG04BX11.*

**Pharmacopoeias.** *US* includes Bovine Acellular Dermal Matrix.

**USP 31** (Bovine Acellular Dermal Matrix). A remodelable collagen scaffold derived from fetal or neonatal bovine skin. It is presented as a flat white sheet that is cut to size and hydrated in sterile saline solution prior to implantation. It is utilised as a structural scaffold in orthopaedic, neurosurgical, urogynaecological, dermatological, plastic, and other reconstructive procedures. The source fetal or neonatal bovine skin is mechanically and chemically processed to isolate the dermis and remove cells and cellular components. To prevent the transmission of infectious disease, the manufacturing process is validated to inactivate viruses potentially present in the source material. To prevent the spread of transmissible spongiform encephalopathies, the source material is acquired from appropriate geographic locations. Store at 15° to 30°.

### Profile

Collagen is a fibrous protein component of mammalian connective tissue making up almost one third of the total body protein.

Collagen, processed in a variety of ways, has been used in surgery as a haemostatic and as a repair and suture material. For cosmetic purposes it has been injected into the dermis to correct scars and other contour deformities of the skin. Collagen implants have been used to block tear outflow in the management of dry eye (p.2140).

Intraurethral administration of collagen has been used in the treatment of stress incontinence (p.2180). There has also been interest in the use of collagen by mouth to suppress the inflammatory process in rheumatoid arthritis (p.11), osteoarthritis (p.11), and scleroderma (p.1817).

Elastin, another component of connective tissue, is an ingredient, often with collagen, of various topical preparations promoted for skin disorders.

◊ References.


1. Herschorn S, *et al.* Early experience with intraurethral collagen injections for urinary incontinence. *J Urol (Baltimore)* 1992; **148:** 1797–1800.
2. Sieper J, *et al.* Oral type II collagen treatment in early rheumatoid arthritis: a double-blind, placebo-controlled, randomized trial. *Arthritis Rheum* 1996; **39:** 41–51.
3. Stanton SL, Monga AK. Incontinence in elderly women: is periurethral collagen an advance? *Br J Obstet Gynaecol* 1997; **104:** 154–7.
4. Anonymous. GAX collagen for genuine stress incontinence. *Drug Ther Bull* 1997; **35:** 86–7.
5. Moskowitz RW. Role of collagen hydrolysate in bone and joint disease. *Semin Arthritis Rheum* 2000; **30:** 87–99.
6. Hamraoui K, *et al.* Efficacy and safety of percutaneous treatment of iatrogenic femoral artery pseudoaneurysm by biodegradable collagen injection. *J Am Coll Cardiol* 2002; **39:** 1297–1304.
7. Corcos J, *et al.* Multicenter randomized clinical trial comparing surgery and collagen injections for treatment of female stress urinary incontinence. *Urology* 2005; **65:** 898–904.
8. Bello AE, Oesser S. Collagen hydrolysate for the treatment of osteoarthritis and other joint disorders: a review of the literature. *Curr Med Res Opin* 2006; **22:** 2221–32.
9. Poon CI, Zimmern PE. Is there a role for periurethral collagen injection in the management of urodynamically proven mixed urinary incontinence? *Urology* 2006; **67:** 725–9.
10. Sakamoto K, *et al.* Long-term subjective continence status and use of alternative treatments by women with stress urinary incontinence after collagen injection therapy. *World J Urol* 2007; **25:** 431–3.


### Preparations

**Proprietary Preparations** (details are given in Part 3)
***Arg.:*** Covadenyl; Eurohair; Hidroplus CL; Medic-S†; Membracel†; Proteita†; Skinderm CL; Zyplast†; ***Austral.:*** Ionil Rinse; Zyderm; Zyplast; ***Canad.:*** Dermatix Catrix†; ***Chile:*** Artrimax; ***Fr.:*** Pangen; ***Ger.:*** Catrix; Colloss; Hemocol; Matricur; Medifome; Pangen†; Porcoll†; Promogran†; Surgicoll†; Tachotop N†; TissuCone; TissuFleece; TissuFoil; Tutoplast Dura; Tutoplast Fascia lata; Zyderm†; Zyplast†; ***Gr.:*** Gelfix; ***Hong Kong:*** Avitene†; Zyderm†; Zyplast†; ***Ital.:*** Alfagen†; Condress; Idroskin; Neopelle†; Skinat; Stimtes†; ***Mex.:*** Fibroquel; ***Neth.:*** Willospon Forte†; ***NZ:*** Contigen; Ionil Rinse†; ***Port.:*** Catrix†; ***Singapore:*** Articolase†; CosmoDerm; CosmoPlast; Zyderm†; Zyplast†; ***UK:*** Catrix†; Contigen; ***USA:*** Avitene; Hemotene†.

**Multi-ingredient:** ***Arg.:*** Amenite E†; Amenite Plus†; Aristaloe; Aspergun†; Celuvital†; Colageno + C; Collagen T2-Gag†; E-devit; Estri-Atlas; Fibracol Plus; Galenic Restaurador Capilar; Hidroplus Nieve†; Hidrosam; Hidrosam T; Lociherp Liposomas Antiage; Lociherp Liposomas Vitaminado; Medicreme; Puraloe Nutritivo; Rep-Cartil; Skinderm R; Totalos Plus; Turgent Colageno; ***Austral.:*** John Plunketts Protective Day Cream; John Plunketts Super Wrinkle Cream; ***Austria:*** TachoComb; ***Belg.:*** Duracoll; ***Chile:*** Acnoxyl Gel Humectante; ***Cz.:*** TachoComb†; ***Fr.:*** Collatamp G†; Promogran; Taido; ***Ger.:*** Collapat II; Integra†; Septocoll; TachoComb†; Targobone; ***Hong Kong:*** TachoComb; ***Hung.:*** TachoComb†; ***Indon.:*** Biolastin; Jointfit; Legreskin; OA Plus; ***Ital.:*** Artrodue; Biomineral 5-Alfa Shampoo; Emofix; Osteoclar; Promogran; Reumilase SD; Secril; Unidermo; ***Malaysia:*** Balance Elastin E†; ***Rus.:*** TachoComb (ТахоКомб); ***Singapore:*** Articolase (w/glucosamine); Seven Seas JointCare Max; ***Switz.:*** Gorgonium; ***Thai.:*** TachoComb†; ***UK:*** Collatamp EG; Jointace; JointCare Max; ***USA:*** PDP Liquid Protein; ***Venez.:*** Artrosamin.

## Collagenase

Clostridiopeptidas; Clostridiopeptidase A; Clostridiopeptidasum A; Colagenasa; Klostridiopeptidaasi A.

*CAS — 9001-12-1.*

*ATC Vet — QD03BA02.*

### Profile

Collagenase is a proteolytic enzyme derived from the fermentation of *Clostridium histolyticum* and has the ability to break down collagen. Preparations containing collagenase are used topically for the debridement of dermal ulcers and burns, and possibly other necrotic lesions, to facilitate granulation and epithelialisation. It has also been given by injection into the intervertebral disc for chemonucleolysis in the treatment of lumbar disc herniation (see low Back Pain, p.7). Collagenase is under investigation for use in Dupuytren's disease and Peyronie's disease.

Hypersensitivity reactions may occur. Local burning, erythema, and pain have been reported at the site of application. It has been suggested that debridement of infected wounds may increase the risk of bacteraemia and that patients should be watched for signs of systemic bacterial infection. The activity of collagenase may be reduced by antiseptics containing detergents, hexachlorophene, and heavy metal ions.

Collagenase potency is expressed in units based on the amount of enzyme required to degrade a standard preparation of undenatured collagen.

**Chemonucleolysis.** Collagenase has been studied as an alternative to chymopapain (p.2281) for chemonucleolysis because of the risk of anaphylaxis with the latter. Although early studies with collagenase reported benefit, there were also reports of back pain and muscle spasm.[1] Collagenase was not as effective as chymopapain in a comparative study,[2] and further study may be warranted before a firm recommendation can be made.


1. Brown MD. Update on chemonucleolysis. *Spine* 1996; **21** (24 suppl): 62S–68S.
2. Wittenberg RH, *et al.* Five-year results from chemonucleolysis with chymopapain or collagenase: a prospective randomized study. *Spine* 2001; **26:** 1835–41.


**Dupuytren's disease.** Collagenase has been reported to be of benefit in the treatment of Dupuytren's contracture.[1]


1. Badalamente MA, Hurst LC. Efficacy and safety of injectable mixed collagenase subtypes in the treatment of Dupuytren's contracture. *J Hand Surg (Am)* 2007; **32:** 767–74.


**Peyronie's disease.** Beneficial effects have been reported with intralesional collagenase in men with Peyronie's disease.[1-3]


1. Gelbard MK, *et al.* The use of collagenase in the treatment of Peyronie's disease. *J Urol (Baltimore)* 1985; **134:** 280–3.
2. Gelbard MK, *et al.* Collagenase versus placebo in the treatment of Peyronie's disease: a double-blind study. *J Urol (Baltimore)* 1993; **149:** 56–8.
3. Jordan GH. The use of intralesional clostridial collagenase injection therapy for Peyronie's disease: a prospective, single-center, non-placebo-controlled study. *J Sex Med* 2008; **5:** 180–7.


### Preparations

**Proprietary Preparations** (details are given in Part 3)
***Belg.:*** Iruxol Mono; ***Braz.:*** Iruxol Mono; Kollagenase; ***Canad.:*** Santyl†; ***Gr.:*** Iruxol Mono; ***Hong Kong:*** Iruxol Mono; ***Ital.:*** Noruxol; ***Neth.:*** Novuxol; ***Port.:*** Ulcerase; ***Switz.:*** Iruxol Mono; ***Turk.:*** Novuxol; ***USA:*** Santyl; ***Venez.:*** Iruxol Simplex.

**Multi-ingredient:** ***Arg.:*** Iruxol; ***Braz.:*** Gyno Iruxol; Iruxol; Kollagenase com cloranfenicol; ***Cz.:*** Iruxol Mono; ***Fin.:*** Iruxol; Iruxol Mono; ***Ger.:*** Iruxol N†; ***Hung.:*** Iruxol Mono; ***Irl.:*** Iruxol Mono; ***Ital.:*** Iruxol; ***Malaysia:*** Iruxol Mono; ***Mex.:*** Ulcoderma; ***Rus.:*** Iruxol (Ируксол); ***S.Afr.:*** Iruxol Mono; ***Singapore:*** Iruxol Mono; ***Spain:*** Iruxol Mono; Iruxol Neo.

## Colophony

Colofonia; Coloph.; Colophane; Colophonium; Kalafuna; Kanifolija; Kolofoni; Kolofónium; Kolofonium; Resin; Resina Pini; Resina Terebinthinae; Rosin.

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

**Ph. Eur. 6.2** (Colophony). The residue remaining after distillation of the volatile oil from the oleoresin obtained from various species of *Pinus*. Translucent, pale yellow to brownish-yellow, angular, irregularly shaped, brittle, glassy pieces of different sizes the surfaces of which bear conchoidal markings. Do not reduce to a fine powder.

### Profile

Colophony is an ingredient of some collodions and plaster-masses. It has been used as an ingredient of ointments and dressings for wounds and minor skin disorders. Skin sensitisation and allergic respiratory symptoms have been reported.

**Hypersensitivity.** Reviews.


1. Downs AM, Sansom JE. Colophony allergy: a review. *Contact Dermatitis* 1999; **41:** 305–10.


### Preparations

***BP 2008:*** Flexible Collodion.

**Proprietary Preparations** (details are given in Part 3)
***Rus.:*** Biopin (Биопин)†.

**Multi-ingredient:** ***Austral.:*** Zam-Buk†; ***Austria:*** Ehrenhofer-Salbe; Vulpuran; ***Braz.:*** Basilicao†; ***Ital.:*** Fialetta Odontalgica Dr Knapp; ***Mex.:*** Parche Negro Belladona; ***Switz.:*** Leucen; ***UK:*** Dispello; Herbheal Ointment; Pickles Corn Caps.

## Comfrey

Boneset; Comfrey Root; Consolidae Radix; Consuelda; Symphytum.

NOTE. Boneset is also a common name used for *Eupatorium perfoliatum* (see p.2267).

**Pharmacopoeias.** *Br.* includes Symphytum Officinale Root for Homoeopathic Preparations and Symphytum Officinale Root, Ethanol. decoctum for Homoeopathic Preparations.

**BP 2008** (Symphytum Officinale Root for Homoeopathic Preparations). The fresh root of *Symphytum officinale*.

**BP 2008** (Symphytum Officinale Root, Ethanol. decoctum for Homoeopathic Preparations). The fresh root of *Symphytum officinale*.

### Profile

Comfrey consists of the dried root and rhizome of *Symphytum officinale* (Boraginaceae); the leaf has also been used. It contains about 0.7% of allantoin, large quantities of mucilage, and some tannin. It may also contain pyrrolizidine alkaloids.

Comfrey was formerly used as an application to wounds and ulcers to stimulate healing and was also given systemically for gastric ulceration. It has been applied topically in the treatment of inflammatory disorders. The healing action of comfrey has been attributed to the presence of allantoin (p.1588).

There are reports of hepatotoxicity attributed to pyrrolizidine alkaloids present in comfrey preparations and such preparations have been withdrawn or banned in a number of countries.

**Homoeopathy.** Comfrey has been used in homoeopathic medicines under the following names: Symphytum officinale; Symph. of.

◊ References.


1. Stickel F, Seitz HK. The efficacy and safety of comfrey. *Public Health Nutr* 2000; **3:** 501–8.
2. Grube B, *et al.* Efficacy of a comfrey root (Symphyti offic. radix) extract ointment in the treatment of patients with painful osteoarthritis of the knee: results of a double-blind, randomised, bicenter, placebo-controlled trial. *Phytomedicine* 2007; **14:** 2–10.
3. D'Anchise R, *et al.* Comfrey extract ointment in comparison to diclofenac gel in the treatment of acute unilateral ankle sprains (distortions). *Arzneimittelforschung* 2007; **57:** 712–16.


**Adverse effects.** Toxic pyrrolizidine alkaloids have been isolated from several species of comfrey plants including common comfrey (*Symphytum officinale*), prickly comfrey (*S. asperum*), and Russian comfrey (*S. uplandicum*). Ingestion of plants containing pyrrolizidine alkaloids is a common cause of hepatic veno-occlusive disease in developing countries[1] and pyrrolizidine alkaloid hepatotoxicity presumably due to comfrey has been reported in North America and Europe.[1,2] Pulmonary endothelial hyperplasia and carcinogenic activity have also been reported in *animals*.[1,2]


1. Ridker PM, McDermott WV. Comfrey herb tea and hepatic veno-occlusive disease. *Lancet* 1989; **i:** 657–8.
2. Bach N, *et al.* Comfrey herb tea-induced hepatic veno-occlusive disease. *Am J Med* 1989; **87**: 97–9.


### Preparations

**Proprietary Preparations** (details are given in Part 3)
***Austria:*** Traumaplant; ***Cz.:*** Traumaplant; ***Ger.:*** Kytta-Plasma f; Kytta-Salbe f; Traumaplant; ***Indon.:*** Mediflor; ***Switz.:*** Kytta Pommade; ***UK:*** Comfrelieve; ***Venez.:*** Traumaplant.

**Multi-ingredient:** ***Cz.:*** Dr Theiss Beinwell Salbe†; Stomatosan†; ***Ger.:*** Kytta-Balsam f; Rhus-Rheuma-Gel N; Syviman N†; ***Israel:*** Comfrey Plus; ***Switz.:*** Gel a la consoude; Keppur; Kytta Baume; Kytta Gel†.

## Complement Blockers

Inhibidores del complemento.

Блокаторы Комплемента

### Profile

Complement is a group of plasma and cellular proteins contributing to the innate immune system and is so called because it complements the microbicidal action of antibodies. The complement system is activated by the antigen-antibody complex followed by a cascade reaction of complement proteins culminating in microbial cell lysis. Complement also plays a part in many other physiological processes and regulatory mechanisms are in place to prevent inflammatory damage to host tissues through the

inappropriate activation of complement. Hereditary or acquired abnormalities of the complement system are associated with a variety of disorders depending on which part of the system is affected, and include recurrent infections, partial lipodystrophy, hereditary angioedema, paroxysmal nocturnal haemoglobinuria, non-specific vasculitis, glomerulonephritis, cardiovascular disease, rheumatoid arthritis, sepsis, asthma, acute respiratory distress syndrome, psoriasis, SLE, bullous pemphigoid, discoid lupus, and graft survival after solid organ transplantation.

A number of substances are used or are under investigation for their ability to block activation of the complement system:

- complement C1 esterase inhibitor (p.2287) is given as replacement therapy in the treatment of hereditary angioedema
- eculizumab (p.2299) is a monoclonal antibody that targets the terminal C5 protein of complement and is given in the treatment of paroxysmal nocturnal haemoglobinuria
- pexelizumab (p.2366) is a similar substance under investigation in patients undergoing coronary artery revascularisation procedures
- mirococept (APT-070, SCR1-3) is a derivative of soluble complement receptor type 1 (SCR1) under investigation for the prevention of post transplantation graft dysfunction
- TP-10, a form of SCR1 has also been investigated for respiratory disorders
- myristoylated-peptidyl-recombinant human CD59 is under investigation for paroxysmal nocturnal haemoglobinuria

◊ References.


1. Bhole D, Stahl GL. Therapeutic potential of targeting the complement cascade in critical care medicine. *Crit Care Med* 2003; **31** (suppl): S97–S104.
2. Brook E, *et al*. Opportunities for new therapies based on the natural regulators of complement activation. *Ann N Y Acad Sci* 2005; **1056:** 176–88.


## Complement C1 Esterase Inhibitor

Inhibidor de la C1 esterasa.

C1-Ингибитор Комплемента

*ATC — B02AB03.*

*ATC Vet — QB02AB03.*

### Profile

Complement C1 esterase inhibitor is an endogenous complement blocker (p.2286) that plays a role in regulation of the complement system. It is prepared from human plasma and given as replacement therapy in hereditary angioedema (p.1081), in which there is a deficiency of natural complement C1-esterase inhibitor. It is given for both short-term prophylaxis and treatment of acute life-threatening attacks by slow intravenous injection or infusion in typical doses of 500 units or, in severe cases, 1000 units. The dose may be repeated if necessary after a few hours.

A recombinant human complement C1 esterase inhibitor (rh C1INH) is under investigation.

◊ Complement C1 esterase inhibitor may be effective in both the prevention and treatment of acute hereditary angioedema.[1] It has also been tried in the management of other conditions including sepsis (see Septicaemia, p.190) and capillary leak syndrome.[2] It is under investigation for the treatment of pancreatitis and for use in allogeneic lung transplantation, thermal injury, and shock.[2] It is also being studied as a means of limiting reperfusion injury in patients with acute myocardial infarction.[3]


1. Waytes AT, *et al*. Treatment of hereditary angioedema with a vapor-heated C1 inhibitor concentrate. *N Engl J Med* 1996; **334:** 1630–4.
2. Caliezi C, *et al*. C1-esterase inhibitor: an anti-inflammatory agent and its potential use in the treatment of diseases other than hereditary angioedema. *Pharmacol Rev* 2000; **52:** 91–112.
3. de Zwaan C, *et al*. Continuous 48-h C1-inhibitor treatment, following reperfusion therapy, in patients with acute myocardial infarction. *Eur Heart J* 2002; **23:** 1670–7.


### Preparations

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

***Arg.:*** Angioneurina†; Berinert P; ***Austria:*** Berinert; ***Cz.:*** Berinert; ***Fr.:*** Esterasine†; ***Ger.:*** Berinert; ***Hung.:*** Berinert P; ***Ital.:*** C1 Inattivatore Umano†; ***Neth.:*** Cetor; ***Switz.:*** Berinert.

## Condurango

Condurango Bark; Condurango cortex; Condurango, écorce de; Eagle-vine Bark.

**Pharmacopoeias.** In *Jpn* and *Swiss*.

### Profile

Condurango, the dried stem bark of *Marsdenia condurango* (*Gonolobus condurango*) (Asclepiadaceae), has been used as a bitter.

**Homoeopathy.** Condurango has been used in homoeopathic medicines under the following names: Marsdenia cundurango; Cond.

### Preparations

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

**Multi-ingredient:** ***Austria:*** Sigman-Haustropfen; ***Braz.:*** Camomila; Estomafitino†; ***Ger.:*** Majocarmin forte†; Nervogastrol N†; Pankreaplex Neu†; Pascopankreat; Pascopankreat novo†; ***Pol.:*** Herbaton; ***Switz.:*** Elixir tonique N; Padma-Lax; Padmed Laxan; Stomacine.

## Congo Red

CI Direct Red 28; Colour Index No. 22120; Czerwień Kongo; Rojo Congo; Rubrum Congoensis. Disodium 3,3′-[biphenyl-4,4′-diylbis(azo)]bis[4-aminonaphthalene-1-sulphonate].

$C_{32}H_{22}N_6Na_2O_6S_2$ = 696.7.

*CAS — 573-58-0.*

### Profile

Congo red is used as a stain in the diagnosis of amyloidosis. It causes amyloid in tissue samples to fluoresce under polarised light.

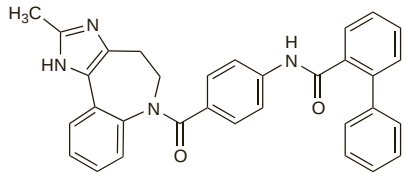
## Conivaptan Hydrochloride *(rINNM)* ⊗

CI-1025; Conivaptan, Chlorhydrate de; Conivaptán, hidrocloruro de; Conivaptani Hydrochloridum; YM-087 (conivaptan or conivaptan hydrochloride). 4″-[(4,5-Dihydro-2-methylimidazo[4,5-*d*][1]benzazepin-6(1*H*)-yl)carbonyl]-2-biphenylcarboxanilide hydrochloride.

Кониваптана Гидрохлорид

$C_{32}H_{26}N_4O_2$,HCl = 535.0.

*CAS — 210101-16-9 (conivaptan); 168626-94-6 (conivaptan hydrochloride).*



*(conivaptan)*

### Adverse Effects and Precautions

The most common adverse effects of conivaptan are infusion site reactions such as erythema, pain, phlebitis, and swelling, which are usually mild but can be severe enough in some patients that infusion must be stopped. Other adverse effects include atrial fibrillation, gastrointestinal disturbances, pyrexia, thirst, electrolyte disturbances, headache, and hypertension or hypotension.

Conivaptan is contra-indicated in hypovolaemic hyponatraemia, and is not indicated for the treatment of patients with congestive heart failure. Rapid correction of serum-sodium concentrations with conivaptan could increase the risk of osmotic demyelination syndrome. Conivaptan should be used with caution in hepatic or renal impairment because systemic exposure can be increased.

### Interactions

As a substrate of the cytochrome P450 isoenzyme CYP3A4, concentrations of conivaptan can be increased by CYP3A4 inhibitors. The use of conivaptan with potent CYP3A4 inhibitors such as ketoconazole, itraconazole, clarithromycin, ritonavir, and indinavir is contra-indicated. Conivaptan itself is also a potent inhibitor of CYP3A4 and may increase the concentrations of other substrates of this isoenzyme, including amlodipine, midazolam, and simvastatin.

Conivaptan can reduce the clearance, and subsequently increase concentrations, of digoxin.

### Pharmacokinetics

Conivaptan is metabolised by the cytochrome P450 isoenzyme CYP3A4, but inhibits its own metabolism. Using a regimen of intravenous loading dose followed by continuous infusion, concentrations of conivaptan initially decrease from the loading dose peak over about 12 hours, then gradually increase. After stopping the infusion, conivaptan has an elimination half-life of about 5 hours. Conivaptan is highly bound to plasma proteins.

### Uses and Administration

Conivaptan hydrochloride is a vasopressin $V_{1a}$ and $V_2$ receptor antagonist. In the management of hyponatraemia it acts mainly at $V_2$ receptors in the renal collecting ducts to increase the excretion of free water. It is used to treat euvolaemic and hypervolaemic hyponatraemia (p.1670), and is not indicated for congestive heart failure.

Conivaptan hydrochloride is given by intravenous infusion. To minimise infusion site irritation, it should be diluted in glucose 5% infusion (loading doses are given in 100 mL of fluid, the subsequent infusions in 250 mL) and given through a large vein; the infusion site should be changed every 24 hours. A loading dose of 20 mg is given over 30 minutes, followed by a continuous infusion of 20 mg over 24 hours. Treatment may be continued at a dose of 20 mg daily titrated to a maximum of 40 mg daily if required. The maximum duration of the infusion is 4 days. If a rapid rise in serum-sodium occurs (more than 12 mmol/litre in 24 hours) conivaptan should be stopped, and serum-sodium and neurological status should be carefully monitored because of the risk of osmotic demyelination syndrome. If hypovolaemia or hypotension develop, conivaptan should be stopped and volume status and vital signs should be monitored. Conivaptan may be resumed at a lower dose, if still indicated, when the rise in serum-sodium has stopped, if there is no evidence of adverse neurological effects and the patient is euvolaemic and no longer hypotensive.

◊ References.


1. Walter KA. Conivaptan: new treatment for hyponatremia. *Am J Health-Syst Pharm* 2007; **64:** 1385–95.


### Preparations

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

***USA:*** Vaprisol.

## Convallaria

Convalaria; Convallariae Herba; Lily of the Valley; Maiblume; Maiglöckchenkraut; May Lily; Muguet; Ziele konwalii.

*CAS — 3253-62-1 (convallatoxol); 13473-51-3 (convalloside); 13289-19-5 (convallatoxoloside); 508-75-8 (convallatoxin).*

**Pharmacopoeias.** In *Ger.* and *Pol.* (from *C. majalis* or closely related species).

### Profile

Convallaria consists of the dried flowers, herb, or the rhizomes and roots of lily of the valley, *Convallaria majalis* (Liliaceae). Several crystalline glycosides have been obtained from the plant including convallarin, convalloside, convallatoxoloside, and convallatoxin.

Convallaria contains cardiac glycosides and has actions on the heart similar to those of digoxin (p.1259). Convallaria is used in herbal medicine.

**Homoeopathy.** Convallaria has been used in homoeopathic medicines under the following names: Convallaria majalis; Conval. m.

◊ *Convallaria majalis* has been designated unsafe for inclusion in foods, beverages, or drugs by the FDA in the USA.[1]


1. Larkin T. *FDA Consumer* 1983; **17** (Oct.): 5.


### Preparations

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

***Ger.:*** Convacard†; Valdig-N Burger†; ***Pol.:*** Convafort.

**Multi-ingredient:** ***Arg.:*** Passacanthine†; ***Austria:*** Omega; ***Ger.:*** Cardibisana†; Convallocor-SL; Convastabil; Miroton; Miroton N†; Oxacant N†; Oxacant-forte N†; Oxacant-Khella N†; Viscorapas duo†; ***Pol.:*** Cardiol C; Kelicardina; Neocardina.

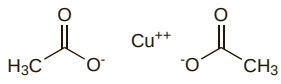
## Copper Acetate

Cuivre, acétate de; Cupri acetas; Cupric Acetate; Kopparacetat; Kuparisetaatti; Miedzi(II) octan; Vario acetatas.

Ацетат Меди; Уксуснокислая Медь

$(C_2H_3O_2)_2Cu,H_2O$ = 199.6.

*CAS — 142-71-2 (anhydrous).*



**Pharmacopoeias.** *Eur.* (see p.vii) includes a form for homoeopathic preparations.

**Ph. Eur. 6.2** (Copper Acetate Monohydrate for Homoeopathic Preparations; Cupri Acetas Monohydricus ad Praeparationes Homoeopathicas). Greenish-blue crystals or green powder. Soluble in water; slightly soluble or very slightly soluble in alcohol.

### Profile

Copper acetate has been used in a variety of dermatological preparations. It is now more usually used complexed with a tripeptide in the form of prezatide copper acetate (p.1611). This acts as a source of ionic copper, which is needed by lysyl oxidase, a copper-dependent enzyme that has a crucial role in the crosslinking of collagen and elastin. For the nutritional and other uses of copper and its salts, see p.1936.

**Homoeopathy.** Copper acetate has been used in homoeopathic medicines under the following names: Cuprum aceticum; Cup. acet.

### Preparations

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

**Multi-ingredient:** ***Ital.:*** Verel; ***Mex.:*** Emplasto Monopolis.