

(Целестодерм-В с Гарамицином): Деха-Gentamicin (Декса-Гентамицин); Triderm (Тридерм); **S.Afr.:** Celestoderm-V with Garamycin†; Diprogenta; Garasone†; Palacos R with Garamycin; Quadri-derm; Septopal; **Singapore:** B-Tasone-G; Beprogen; Celestoderm-V with Garamycin†; Combiderm; Conazole; Dexamytrex; Diprogenta; Garasone; Gentricidm; Gentrison; Infectoflami; Modaderm; Neoderm; Quadri-derm†; Refobacin Bone Cement R; Refobacin-Palacos R†; Septopal†; Tri-Micon; Triderm; Voltamicin†; **Spain:** Celestoderm Gentamicina; Cuatro-derm; Diprogenta; Epitelizante; Flugen; Flutnal Gentamicina; Gentadexa; Interderm; Novoter Gentamicina; **Swed.:** Celeston valerat med gentamicin; Septopal†; **Switz.:** Diprogenta; Indobiotic†; Infectoflam; Ophatone; Quadri-derm; Septopal; Triderm; Voltamicin; **Thai.:** Beprogen; Beprogena; Dexamytrex; Diprogenta†; Genquin; Gentaf-F; Infectoflam; Pred Oph; Refobacin-Palacos R; Septopal; **Turk.:** Indobiotic; **UK:** Collatamp EG; Gentisone HC; Palacos LV with Gentamicin; Palacos R with Gentamicin; Septopal; Vipsogal; **USA:** Pred G; **Venez.:** Betaderm con Gentamicina; Celestoderm con Gentalyn; Diprogenta; Garabet; Garasone; Gentidexa; Gentisor†; Propiogenta†; Quadri-derm; Triderm; Tridetarmon.

### Gramicidin (BAN, rINN)

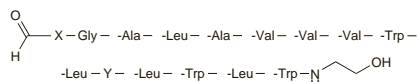
Gramicidin D; Gramicidin (Dubos); Gramicidina; Gramicidinas; Gramicidine; Gramicidinum; Gramisidini; Gramisidin.

#### ГРАМИЦИДИН

CAS — 1405-97-6.

ATC — R02AB30.

ATC Vet — QR02AB30.



Gramicidin	X	Y	Mol. Formula
A1	-Val	-Trp	C H N O
A2	-Ile	-Trp	C H N O
B1	-Val	-Phe	C H N O
C1	-Val	-Tyr	C H N O
C2	-Ile	-Tyr	C H N O

NOTE. The name gramicidin was formerly applied to tyrothricin.

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

**Ph. Eur. 6.2** (Gramicidin). It consists of a family of antimicrobial linear polypeptides usually obtained by extraction from tyrothricin, the complex isolated from the fermentation broth of *Bacillus brevis*. The main component is gramicidin A1, together with gramicidins A2, B1, C1, and C2 in particular. The potency is not less than 900 units/mg calculated with reference to the dried substance. A white or almost white, slightly hygroscopic, crystalline powder. Practically insoluble in water; sparingly soluble in alcohol; soluble in methyl alcohol. Store in airtight containers. Protect from light.

**USP 31** (Gramicidin). An antibacterial substance produced by the growth of *Bacillus brevis* (Bacillaceae); it may be obtained from tyrothricin. It has a potency of not less than 900 micrograms of gramicidin per mg, calculated on the dried basis. A white or practically white, odourless, crystalline, powder. Insoluble in water; soluble in alcohol. Store in airtight containers.

#### Profile

Gramicidin has properties similar to those of tyrothricin (p.358) and is too toxic to be given systemically. It is used topically for the local treatment of susceptible infections usually with other antibacterials such as neomycin and polymyxin B, and often with a corticosteroid as well.

#### Preparations

**USP 31:** Neomycin and Polymyxin B Sulfates and Gramicidin Cream; Neomycin and Polymyxin B Sulfates and Gramicidin Ophthalmic Solution; Neomycin and Polymyxin B Sulfates, Gramicidin, and Hydrocortisone Acetate Cream; Neomycin Sulfate and Gramicidin Ointment; Nystatin, Neomycin Sulfate, Gramicidin, and Triamcinolone Acetonide Cream; Nystatin, Neomycin Sulfate, Gramicidin, and Triamcinolone Acetonide Ointment.

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

**Multi-ingredient:** **Arg.:** Antibiocort†; Aseptobron N; Biotaer Nasal; Bu-coangin N; Caext; Carnot Colutorio; Desenfriol Caramelos†; Gargaletas; Gramibiotic†; Graneodin; Graneodin N; Kenacomb; Nasomicina; Neo Col-tirot; Neo Pelvicillin; Pantometil; Proetztotal; **Austral.:** Kenacomb; Neosporin; Otopomb Otic; Otodex; Sofradex; Soframycin; **Austria:** Mycostatin V; Topsisym polyvalent; Volon A antibiotikahaltig; **Belg.:** Mycolog; Polyspectran Gramicidine; **Braz.:** Fonergin; Londerm-N; Mud; Neolon-D; Omclon A M; Onclupis; **Canad.:** Antibiotic Cream†; Kenacomb†; Neosporin; Opticort; Optimyxin; Optimyxin Plus; Polycidin†; Polysporin; Polysporin Complete Antibiotic; Polysporin For Kids; Polysporin Plus Pain Relief; Polysporin Triple Antibiotic; Polytopic; ratio-Triacomb; Sofracort; Soframycin†; Triacomb†; Viaderm-KC; **Chile:** Grifofalt†; Oftabiotic†; **Cz.:** Sofradex†; **Denm.:** Kenalog Comp med Mycostatin; Sofradex; **Fin.:** Bafucin; Polysporin; Sofradex; **Ger.:** Polyspectran; **Gr.:** Kenacomb; Neo-Pripherin; **Hong Kong:** Kenacomb; Neosporin; Polyo-ph; Sofradex; Triacomb; **Hung.:** Polyspor; **India:** Kenacomb; Kenalog-S; Neosporin; Sofracort; **Indon.:** Ble-cidex; Isotic Enpigi; Neosyd; Sofradex; **Irl.:** Graneodin; Kenacomb; Neosporin†; Sofradex; Soframycin†; **Israel:** Dermacombin; Kenacomb†; **Ital.:** Eta Biocortilen VC; Vasosterone Antibiotico; **Malaysia:** Kenacomb; Poci-n G; Sofradex; **Mex.:** Biotarson N; Biotarson O; Kenacomb; Neosporin; Nicobid†; Polixin; Poly-Micron; Septilisin; Sulned; **Neth.:** Mycolog; Polyspec-tran G†; Sofradex; **Norw.:** Sofradex; **NZ:** Kenacomb; Sofradex; Soframycin; Viaderm-KC; **Philipp.:** Kenacomb; Lidex NGN; Neosporin; Novasorin; **Pol.:** Dicortineff; Triacomb; **Port.:** Dropcina; Kenacomb; **S.Afr.:** Kenacomb; Neosporin†; Sofradex; **Singapore:** Kenacomb†; Sofradex; **Spain:**

Flodemol; Fludrone†; Intradermo Cort Ant Fung†; Midacina; Ofalmowell; Spectrocin†; Tivitis; Trigon Topico; **Swed.:** Bafucin; **Switz.:** Angidine; My-colog N; Mycolog†; Neosporin; Sofradex; Topsisym polyvalent; Tyrothricine + Gramicidine; **Thai.:** Dermacombin; Kenacomb; Neosporin†; Opsacin†; Polyo-ph; Sofradex; Topifarm; Xanalim; **Turk.:** Neosporin; **UAE:** Pandem†; **UK:** Graneodin†; Neosporin; Sofradex; Tri-Adcortyl; **USA:** Neosporin; Ocu-Spor-G; Ocutricin; Polymycin; **Venez.:** Kenacomb.

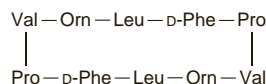
### Gramicidin S (rINN)

Gramicidin C; Gramicidina S; Gramicidine S; Gramicidinum S; So-viet Gramicidin.

#### ГРАМИЦИДИН С

C<sub>60</sub>H<sub>92</sub>N<sub>12</sub>O<sub>10</sub> = 1141.4.

CAS — 113-73-5.



#### Profile

Gramicidin S is an antibacterial polypeptide, produced by *Bacillus brevis*, and has similar properties to tyrothricin (p.358). It is unsuitable for systemic use and is used topically for the local treatment of susceptible infections and as lozenges for infections of the mouth and throat. The hydrochloride is used similarly.

#### Preparations

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

**Rus.:** Grammidin.

**Multi-ingredient:** **Indon.:** FG Ointment; FG Troches.

### Halquinol (BAN)

Chlorhydroxyquinoline; Chlorquinol; Halquinols (USAN); SQ-16401. A mixture of the chlorinated products of quinolin-8-ol containing 57 to 74% of 5,7-dichloroquinolin-8-ol (chloroxine, p.242), 23 to 40% of 5-chloroquinolin-8-ol (clioquinone, p.530), and not more than 4% of 7-chloroquinolin-8-ol.

CAS — 8067-69-4.

#### Profile

Halquinol is a halogenated hydroxyquinoline with properties similar to those of clioquinol (p.254). It is used topically in infected skin conditions.

#### Preparations

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

**UK:** Valpeda.

**Multi-ingredient:** **Denm.:** Kenacutan; **Norw.:** Kenacutan; **Swed.:** Kenacutan.

### Ibafloxacin (BAN, USAN, rINN)

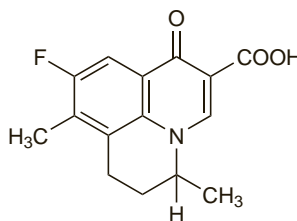
Ibafloksasini; Ibafoxacine; Ibafoxacino; Ibafoxacinum; R-835; S-25930. 9-Fluoro-6,7-dihydro-5,8-dimethyl-1-oxo-1H,5H-benzo[*ij*]quinolinazine-2-carboxylic acid.

#### ИБАФЛОКСАЦИН

C<sub>15</sub>H<sub>14</sub>FNO<sub>3</sub> = 275.3.

CAS — 91618-36-9.

ATC Vet — QJ01MA96.



#### Profile

Ibafloxacin is a fluoroquinolone antibacterial that is used in veterinary medicine for the treatment of susceptible infections in cats and dogs.

### Imipenem (BAN, USAN, rINN)

N-Formimidoyl Thienamycin; Imipemide; Imipeneemi; Imipénem; Imipenem monohydrate; Imipenemas; Imipenemum; Imipenemum Monohydratum; MK-787; MK-0787. (5R,6S)-6-[(R)-1-Hydroxyethyl]-3-(2-iminoethylaminoethylthio)-7-oxo-1-azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid monohydrate.

#### ИМИПЕНЕМ

C<sub>12</sub>H<sub>17</sub>N<sub>3</sub>O<sub>4</sub>S<sub>2</sub>H<sub>2</sub>O = 317.4.

CAS — 64221-86-9 (anhydrous imipenem); 74431-23-5 (imipenem monohydrate).

**Description.** Imipenem is the N-formimidoyl derivative of thienamycin, an antibiotic produced by *Streptomyces catleya*.

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

**Ph. Eur. 6.2** (Imipenem). A white, almost white, or pale yellow powder. Sparingly soluble in water; slightly soluble in methyl alcohol. A 0.5% solution in water has a pH of 4.5 to 7.0. Store in airtight containers at a temperature of 2° to 8°.

**USP 31** (Imipenem). A white to tan-coloured crystalline powder. Sparingly soluble in water; slightly soluble in methyl alcohol. Store at a temperature not exceeding 8°.

**Incompatibility and stability.** Imipenem is unstable at alkaline or acidic pH and the commercially available injection of imipenem with cilastatin sodium for intravenous use is buffered to provide, when reconstituted, a solution with pH 6.5 to 7.5. Licensed product information advises against mixing with other antibacterials.

#### References.

1. Bigley FP, *et al.* Compatibility of imipenem-cilastatin sodium with commonly used intravenous solutions. *Am J Hosp Pharm* 1986; **43**: 2803-9.
2. Smith GB, *et al.* Stability and kinetics of degradation of imipenem in aqueous solution. *J Pharm Sci* 1990; **79**: 732-40.

### Adverse Effects

Imipenem is always given with the enzyme inhibitor cilastatin and thus clinical experience relates to the combination.

Adverse effects with imipenem-cilastatin are similar in general to those with other beta lactams (see Benzylpenicillin, p.213, and Cefalotin, p.219). Hypersensitivity reactions such as skin rashes, urticaria, eosinophilia, fever, and, rarely, anaphylaxis may occur. Gastrointestinal effects include nausea, vomiting, diarrhoea, tooth or tongue discoloration, and altered taste. Superinfection with non-susceptible organisms such as *Enterococcus faecium*, strains of *Pseudomonas aeruginosa* with acquired resistance, and *Candida* may also occur. Pseudomembranous colitis may develop. Erythema multiforme, exfoliative dermatitis, Stevens-Johnson syndrome, and toxic epidermal necrolysis have been reported rarely. Increases in liver enzymes and abnormalities in haematological parameters, including a positive Coombs' test, have been noted.

Local reactions such as pain or thrombophlebitis may occur after injection.

Seizures or convulsions have been reported with imipenem-cilastatin, particularly in patients with a history of CNS lesions and/or poor renal function, but sometimes in those without predisposing factors for seizures given recommended doses. Mental disturbances and confusion have also been reported.

Cilastatin has protected against the nephrotoxicity seen with high doses of imipenem given experimentally to animals. A harmless reddish coloration of urine has been observed in children.

#### Effects on the nervous system. References.

1. Eng RH, *et al.* Seizure propensity with imipenem. *Arch Intern Med* 1989; **149**: 1881-3.
2. Brown RB, *et al.* Seizure propensity with imipenem. *Arch Intern Med* 1990; **150**: 1551.
3. Job ML, Dretter RH. Seizure activity with imipenem therapy: incidence and risk factors. *DICP Ann Pharmacother* 1990; **24**: 467-9.
4. Leo RJ, Ballow CH. Seizure activity associated with imipenem use: clinical case reports and review of the literature. *DICP Ann Pharmacother* 1991; **25**: 351-4.
5. Duque A, *et al.* Vertigo caused by intravenous imipenem/cilastatin. *DICP Ann Pharmacother* 1991; **25**: 1009.
6. Lucena M, *et al.* Imipenem/cilastatin-associated hiccups. *Ann Pharmacother* 1992; **26**: 1459.
7. Norrby SR. Neurotoxicity of carbapenem antibacterials. *Drug Safety* 1996; **15**: 87-90.

**Hypersensitivity.** A retrospective analysis<sup>1</sup> involving a total of 211 patients appeared to show that those with a history of reported or documented penicillin allergy had an 11% incidence of hypersensitivity reactions when treated with a carbapenem antibacterial compared with 2.7% for those without such a history of