

**Pharmacopoeias.** In *Eur.* (see p.vii) and *US*, both for veterinary use.

**Ph. Eur. 6.2** (Tylosin for Veterinary Use; Tylosin BP 2008; Tylosin BP(Vet) 2008). A mixture of macrolide antibiotics produced by a strain of *Streptomyces fradiae* or by any other means. The main component of the mixture is tylosin A, but tylosin B (desmycosin), tylosin C (macrocin), and tylosin D (relomycin) may also be present. An almost white or slightly yellow powder. Slightly soluble in water; freely soluble in dehydrated alcohol and in dichloromethane. It dissolves in dilute solutions of mineral acids. A 2.5% suspension in water has a pH of 8.5 to 10.5. Protect from light.

**USP 31** (Tylosin). A macrolide antibiotic substance or mixture of such substances produced by the growth of *Streptomyces fradiae* or by any other means. A white to buff-coloured powder. Slightly soluble in water; soluble in alcohol, in amyl acetate, in chloroform, and in dilute mineral acids; freely soluble in methyl alcohol. It loses not more than 5% of its weight on drying. Protect from light, moisture, and temperatures exceeding 40°.

### Tylosin Tartrate (BANM, rINN)

Tartrato de tilosina; Tilozin-tartarát; Tylozinitartraatti; Tylosin tartrát; Tylosine, tartrate de; Tylosini tartras; Tylosintartrat; Tylozyny winian.

Тилозина Тартрат

$C_{46}H_{77}NO_{17} \cdot 2C_4H_6O_6 = 1982.3$   
CAS — 1405-54-5.

**Pharmacopoeias.** In *Eur.* (see p.vii) and *US* for veterinary use.

**Ph. Eur. 6.2** (Tylosin Tartrate for Veterinary Use; Tylosin Tartrate BP 2008; Tylosin Tartrate BP(Vet) 2008). An almost white or slightly yellow hygroscopic powder. Freely soluble in water and in dichloromethane; slightly soluble in dehydrated alcohol. It dissolves in dilute solutions of mineral acids. A 2.5% solution in water has a pH of 5.0 to 7.2. Store in airtight containers. Protect from light.

**USP 31** (Tylosin Tartrate). A tartrate of a mixture of macrolide antibiotic substances, or the mixture of such substances, produced by the growth of *Streptomyces fradiae*, or by any other means. Its potency is not less than 800 micrograms of tylosin per mg, calculated on the dried basis.

An almost white or slightly yellow, hygroscopic powder. Freely soluble in water and in dichloromethane; slightly soluble in alcohol. It dissolves in dilute solutions of mineral acids. pH of a 2.5% solution in water is between 5.0 and 7.2. Store in airtight containers at a temperature of 25°, excursions permitted between 15° and 30°. Protect from light.

### Profile

Tylosin is a macrolide antibacterial with actions similar to those of erythromycin (p.269). Tylosin and its phosphate and tartrate salts are used in veterinary medicine in the prophylaxis and treatment of infections caused by susceptible organisms.

Tylosin and tylosin phosphate have been added to animal feeding stuffs as growth promoters for pigs.

### Tylvalosin Tartrate (USAN, rINN)

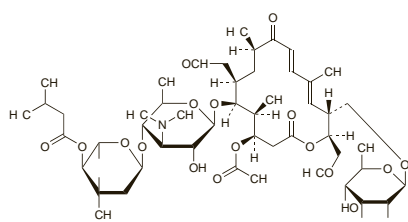
Acetyl Isovaleryl Tylosin Tartrate; Acetylisovalerylytylosin Tartrate; Tartrato de tilvalosina; Tylvalosine, Tartrate de; Tylvalosini Tartras. (4R,5S,6S,7R,9R,11E,13E,15R,16R)-15-[[[(6-Deoxy-2,3-di-O-methyl-β-D-allopyranosyl)oxy]methyl]-6-[(3,6-dideoxy-4-O-[2,6-dideoxy-3-C-methyl-4-O-(3-methylbutanoyl)-α-L-ribo-hexopyranosyl]-3-(dimethylamino)-β-D-glucopyranosyl)oxy]-1,6-ethyl-5,9,13-trimethyl-2,10-dioxo-7-(2-oxoethyl)oxacyclohexadeca-11,13-dien-4-yl acetate (2R,3R)-2,3-dihydroxybutanedioate.

Тильвальозина Тартрат

$C_{53}H_{87}NO_{19} \cdot xC_4H_6O_6$

CAS — 63409-12-1 (tylvalosin); 63428-13-7 (tylvalosin tartrate).

ATC Vet — QJ01FA92.



(tylvalosin)

### Profile

Tylvalosin is a derivative of tylosin (p.357) and is used similarly as the tartrate in veterinary medicine.

### Tyrothricin (BAN, rINN)

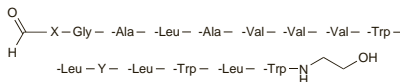
Tirotricina; Tirotricina; Tirotrisin; Tyrothricine; Tyrothricinum; Tyrotricin; Tyrotrisiini.

Тиротрицин

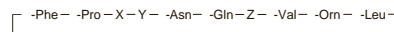
CAS — 1404-88-2.

ATC — D06AX08; R02AB02; S01AA05.

ATC Vet — QD06AX08; QR02AB02; QS01AA05.



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



Tyrocidin	Mol. Formula	X	Y	Z
A	C H N O	-Phe	-Phe	-Tyr
B	C H N O	-Trp	-Phe	-Tyr
C	C H N O	-Trp	-Trp	-Tyr
D	C H N O	-Trp	-Trp	-Trp
E	C H N O	-Phe	-Phe	-Phe

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

**Ph. Eur. 6.2** (Tyrothricin). A mixture of antimicrobial linear and cyclic polypeptides, isolated from the fermentation broth of *Bacillus brevis*. It consists mainly of gramicidins and tyrocidins; other related compounds may be present in smaller amounts. The potency is 180 to 280 international units/mg, calculated with reference to the dried substance. A white or almost white powder. Practically insoluble in water; soluble in alcohol and in methyl alcohol. Store in airtight containers. Protect from light.

**USP 31** (Tyrothricin). An antibacterial substance produced by the growth of *Bacillus brevis*. It is a mixture consisting chiefly of gramicidin and tyrocidine, the latter being usually present as the hydrochloride. Store in airtight containers.

### Adverse Effects and Precautions

Tyrothricin is too toxic to be used systemically; effects that have been reported include hepatic and renal toxicity as well as Stevens-Johnson syndrome. It damages the sensory epithelium of the nose and instances of prolonged loss of smell have occurred after its use as a nasal spray or instillation. Tyrothricin should not be instilled into the nasal cavities or into closed body cavities.

### Uses and Administration

Tyrothricin is unsuitable for systemic use. It is active *in vitro* against many Gram-positive bacteria and has been used either alone or with other antibacterials in the local treatment of infections mainly of the skin and mouth.

### Preparations

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

**Fr.:** Codetricine†; **Ger.:** Tyrosur; **Gr.:** Triciderm; **Hong Kong:** Tyrosur†; **Ital.:** Faringotricina; Hydrotricine; Rinotricina; **Port.:** Hydrotricine; **Turk.:** Hydrotricine.

**Multi-ingredient:** **Arg.:** Algiodent; Aseptobron Caramelos; Bagociletas; Biotaer an Caramelos; Biotaer Gamma†; Biotaer Nebulizable; Biotaer Ultra-sone Nebulizable†; Bucotricin; Caramelos Antibioticos; Caramelos Antibioticos Bucoangin†; Caramelos Antibioticos Lefmar; Collubiazol; Fanaletas; Filotricin A; Fonergine; Gineseptina†; Oralsone C; Pulmosan Caramelos; Solumerin; Suavisant; Sulfanoral T; Tavinec; Vagical; Vagisan; Vagisan Compuesto; Vulnofilin Compuesto†; **Austria:** Dorithricin; Gingivan; Lemocin; Limex; Neocones; Tyrothricin comp; Tyrothricin compositum; **Belg.:** Lemocin; Pantricine†; Tricidine†; Tyro-Drops; **Braz.:** Amidalin†; Amidagen; Amigdalol; Amigdamicin†; Anginotricin; Auritricin; Colpagex N; Colpolase; Dermosed†; Gargotan†; Gynax-N; Gyrol†; Lacto Vagin†; Larintil†; Malvatricin; Malvatricin Ginecologico; Malvatricin Pastillas; Malvatricin Pronto; Malvatricin Solucao para diluir; Malvatricin Spray; Mentozil†; Otovix†; Oturga; Passilin†; Tirotrin†; Trivagel N; Vagitrin-N; **Canada:** Antibiotic Cold Sore Ointment; Soropon; **Cz.:** Dr. Rentschler Halstabletten†; **Fr.:** Broncorinol rhinites†; Codetricine vitamine C†; Collunovar†; Ergix†; Veybirol-Tyrothricine†; **Ger.:** Anginomycin†; Dorithricin Limone†; Dorithricin Original; Inspiro Halsschmerztabletten†; Lemocin; Nordathricin N†; Trachisan†; Tyrosur; **Gr.:** Oulogram; Trachisan; **Hong Kong:** Deq; Trachisan†; Tyricine; Tyroacine; Tyrothricin Co; **Hung.:** Dorithricin; Tyrosur; **India:** Tytin; **Indon.:** Lemocin; **Ir.:** Tyrozets; **Israel:** Acnex†; Kalgaron; Lemocin; Rafathricin with Benzocaine; **Ital.:** Bio-Arscolloid; Deltavagin; Furotricina; Golamixin; Kinogen; Rinocidina; **Malaysia:** Deq; Trachisan†; Upha Lozenges; **Mex.:** Angenovac; **Port.:** Afonina; Mebocaina; Medifon; Mentocaina R; Oralbiotic; **Singapore:** Beathricin; Deq; Dorithricin; Trachisan; **Spain:** Anginovac; Bucometasana; Cicatral; Cohortan; Denticelso; Difomiltricina; Gradin Del D Andreu†; Hemodren Compuesto†; Miozets; Neocones; Otosodol Biotic; Pastillas Koki Ment Tiro; Piorlis; Roberfarin; Sedofarin; Viberol Tirotricina; **Switz.:** Gem; Lemocin; Mebucaine; Mebucasal f; Othothricin; Rhinotricinol; Sangerol; Solmuacine; Trachisan†; Tyrocombin; Tyroqualine; Tyrothricin; Tyrothricine + Gramicidine; **Thai.:** Deq; Ivazin; Sigatricin; Trocacin; Troneo†; **Turk.:** Neolet; **UAE:** B-Cool; **UK:** Tyrozets; **Venez.:** Otan.

### Valnemulin (BAN, rINN)

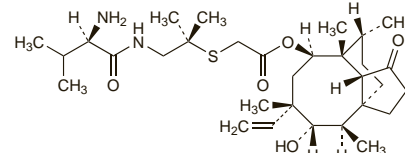
Valnemulini; Valnemulina; Valnémuline; Valnemulinum. ((2-[(R)-2-Amino-3-methylbutylamido]-1,1-dimethylethyl)thio)acetic acid 8-ester with (3aS,4R,5S,6S,8R,9R,9aR,10R)-octahydro-5,8-dihydroxy-4,6,9,10-tetramethyl-6-vinyl-3a,9-propano-3aH-cyclopentacycloocten-1(4H)-one.

Вальнемулин

$C_{31}H_{52}N_2O_5S = 564.8$

CAS — 101312-92-9 (valnemulin); 133868-46-9 (valnemulin hydrochloride).

ATC Vet — QJ01XQ02.



**Pharmacopoeias.** *Eur.* (see p.vii) includes the hydrochloride for veterinary use.

### Profile

Valnemulin is an antibacterial used as the hydrochloride in veterinary medicine.

### Vancomycin (BAN, rINN)

Vancomicina; Vancomycine; Vancomycinum; Vankomycin; Vankomysiini. (S<sub>1</sub>)-(3S,6R,7R,22R,23S,26S,36R,38aR)-44-[[2-O-(3-Amino-2,3,6-trideoxy-3-C-methyl-α-L-lyxo-hexopyranosyl)-β-D-glucopyranosyl]oxy]-3-(carbamoylmethyl)-10,19-dichloro-2,3,4,5,6,7,23,24,25,26,36,37,38,38a-tetradecahydro-7,22,28,30,32-pentahydroxy-6-[(2R)-4-methyl-2-(methylamino)valeramide]-2,5,24,38,39-pentaoxo-22H-8,11:18,21-diethe-no-23,36-(minomethano)-1,3,16:3,1,35-dimetheno-1H,16H-[1,6,9]oxadiazacyclohexadecino[4,5-m][10,2,16]-benzoxadiazacyclotetracosine-26-carboxylic acid.

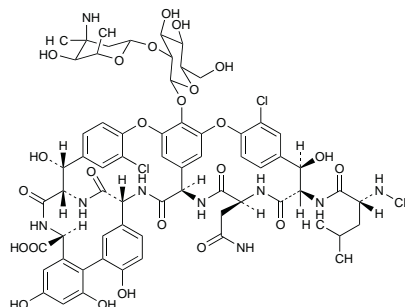
Ванкомицин

$C_{66}H_{75}Cl_2N_9O_{24} = 1449.3$

CAS — 1404-90-6.

ATC — A07AA09; J01XA01.

ATC Vet — QA07AA09; QJ01XA01.



**Description.** A glycopeptide antimicrobial substance or mixture of glycopeptides produced by the growth of certain strains of *Amycolatopsis orientalis* (*Nocardia orientalis*, *Streptomyces orientalis*), or by any other means.

**Pharmacopoeias.** In *US*.

**USP 31** (Vancomycin). Store in airtight containers.

### Vancomycin Hydrochloride (BANM, rINN)

Hidrocloruro de vancomicina; Vancomycine, chlorhydrate de; Vancomycin-hydrochlorid; Vancomysiini hydrochloridum; Vankomicinhidroklorid; Vankomicinon hydrochloridas; Vankomisin Hidroklorür; Vankomycinihydroklorid; Vankomysiinihydrokloridi; Vankomycyny chlorowodorek.

Ванкомицина Гидрохлорид

$C_{66}H_{75}Cl_2N_9O_{24} \cdot HCl = 1485.7$

CAS — 1404-93-9.

ATC — A07AA09; J01XA01.

ATC Vet — QA07AA09; QJ01XA01.

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

**Ph. Eur. 6.2** (Vancomycin hydrochloride). A mixture of related glycopeptides, consisting principally of vancomycin B, a substance produced by certain strains of *Amycolatopsis orientalis* or obtained by any other means. A white or almost white, hygroscopic powder. Freely soluble in water; slightly soluble in alcohol. A 5% solution in water has a pH of 2.5 to 4.5. Store in air-