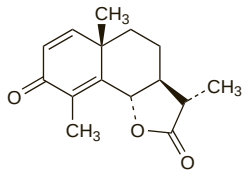
Santonin

Santoniini; Santonina; Santoninum. (3*S*,3a*S*,5a*S*,9b*S*)-3a,5,5a,9b-Tetrahydro-3,5a,9-trimethylnaphtho[1,2-*b*]furan-2,8(3*H*,4*H*)-dione.

Сантонин

$C_{15}H_{18}O_3$ = 246.3.

CAS — 481-06-1.



Pharmacopoeias. In *Jpn*.

Profile

Santonin is a crystalline lactone obtained from the dried unexpanded flowerheads of *Artemisia cina* (santonica, wormwood) and other species of *Artemisia* (Compositae). It was formerly used as an anthelmintic in the treatment of roundworm (*Ascaris*) infection, but has been superseded by other less toxic anthelmintics.

It is used as a flavour in food.

Selamectin *(USAN, rINN)*

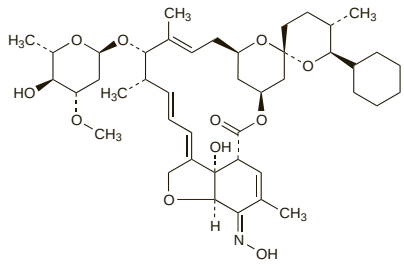
Selamectina; Sélamectine; Selamectinum; Selamektiini; Selamektin; UK-124114. (2a*E*,4*E*,5′*S*,6*S*,6′*S*,7*S*,8*E*,11*R*,13*R*,15*S*,17a*R*,20a*R*,20b*S*)-6′-Cyclohexyl-7-[(2,6-dideoxy-3-*O*-methyl-α-L-*arabino*-hexopyranosyl)oxy]-3′,4′,5′,6,6′,7,10,11,14,15,20a,20b-dodecahydro-20b-hydroxy-5′,6,8,19-tetramethylspiro(11,15-methano-2*H*,13*H*,17*H*-furo[4,3,2-*p*,*q*][2,6]benzodioxacyclooctadecin-13,2′-[2*H*]pyran)-17,20(17a*H*)-dione 20-oxime.

Селамектин

$C_{43}H_{63}NO_{11}$ = 770.0.

CAS — 165108-07-6.

ATC Vet — QP54AA05.



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

Ph. Eur. 6.2 (Selamectin for Veterinary Use). A semi-synthetic product derived from a fermentation product. A white or almost white, hygroscopic powder. Practically insoluble in water; soluble in acetone and in dichloromethane; freely soluble in isopropyl alcohol; sparingly soluble in methyl alcohol. Store in airtight containers.

Profile

Selamectin is an avermectin anthelmintic and ectoparasiticide used in veterinary medicine.

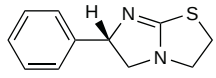
Tetramisole Hydrochloride *(BANM, USAN, rINNM)*

Hidrocloruro de tetramisol; ICI-50627; McN-JR-8299-11; R-8299; Tétramisole, Chlorhydrate de; Tetramisoli Hydrochloridum. (±)-2,3,5,6-Tetrahydro-6-phenylimidazo[2,1-*b*]thiazole hydrochloride.

Тетрамизола Гидрохлорид

$C_{11}H_{12}N_2S,HCl$ = 240.8.

CAS — 5036-02-2 (tetramisole); 5086-74-8 (tetramisole hydrochloride).



(tetramisole)

Pharmacopoeias. In *Fr.* for veterinary use only.

Profile

Tetramisole hydrochloride is an anthelmintic used in veterinary medicine for the control of nematode infections. It is a racemic mixture and the laevo-isomer, levamisole hydrochloride (p.147), accounts for most of its activity.

Preparations

Proprietary Preparations (details are given in Part 3)
Braz.: Ascarizole†; Tetramizotil†.

Multi-ingredient: ***India:*** Jetomisol-P.

Thiacetarsamide *(rINNM)*

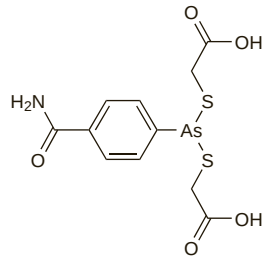
Thiacétarsamide; Thiacetarsamidum; Tiacetarsamida. *p*-[Bis(carboxymethylmercapto)arsino]benzamide; 4-Carbamylphenyl bis[carboxymethylthio]arsenite.

Тиацетарсамид

$C_{11}H_{12}AsNO_5S_2$ = 377.3.

CAS — 531-72-6.

ATC Vet — QP52AX08.



Profile

Thiacetarsamide is an anthelmintic used in veterinary medicine.

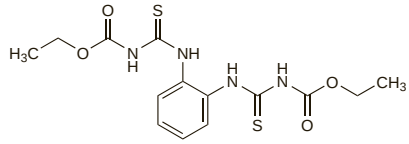
Thiophanate *(BAN)*

Tiofanato. 4,4′-*o*-Phenylenebis(ethyl 3-thioallophanate).

$C_{14}H_{18}N_4O_4S_2$ = 370.4.

CAS — 23564-06-9.

ATC Vet — QP52AC04.



Profile

Thiophanate is an anthelmintic used in veterinary medicine for the control of nematode infections.

Tiabendazole *(BAN, rINN)*

E233; MK-360; Thiabendazole *(USAN)*; Tiabendatsoli; Tiabendazol; Tiabendazolas; Tiabendazolum. 2-(Thiazol-4-yl)-1*H*-benzimidazole.

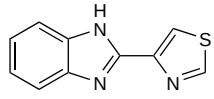
Тиабендазол

$C_{10}H_7N_3S$ = 201.2.

CAS — 148-79-8.

ATC — D01AC06; P02CA02.

ATC Vet — QD01AC06; QP52AC10.



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

Ph. Eur. 6.2 (Tiabendazole). A white or almost white crystalline powder. Practically insoluble in water; slightly soluble in alcohol and in dichloromethane; it dissolves in dilute mineral acids. Protect from light.

USP 31 (Thiabendazole). A white to practically white, odourless or practically odourless, powder. Practically insoluble in water; slightly soluble in alcohol and in acetone; very slightly soluble in chloroform and in ether.

Adverse Effects

Dizziness and gastrointestinal disturbances, especially anorexia, nausea and vomiting, diarrhoea, and abdominal pain are common during treatment with tiabendazole. Other adverse effects occurring occasionally include pruritus, skin rashes, headache, fatigue, drowsiness, drying of mucous membranes, hyperglycaemia, disturbance of vision including colour vision, leucopenia, tinnitus, effects on the liver including cholestasis and parenchymal damage (in some cases severe and irreversible), enuresis, crystalluria, and bradycardia and hypotension. There have also been reports of erythema multiforme, fatal Stevens-Johnson syndrome, toxic epidermal necrolysis, convulsions, and effects on mental state.

Fever, chills, angioedema, and lymphadenopathy have been reported, but may represent allergic response to dead parasites rather than to tiabendazole.

The urine of some patients taking tiabendazole may have a characteristic odour similar to that after eating asparagus; it is attributed to the presence of a tiabendazole metabolite.

Effects on the salivary glands. Dry mouth with swollen parotid and salivary glands suggestive of the sicca complex preceded the development of cholestatic jaundice in a 17-year-old boy given tiabendazole.[1]

1. Davidson RN, *et al.* Intrahepatic cholestasis after thiabendazole. *Trans R Soc Trop Med Hyg* 1988; **82:** 620.

Hypersensitivity. Severe erythema multiforme developed in a patient 16 days after a course of tiabendazole.[1] Many of the lesions encircled pre-existing melanocytic naevi.

1. Humphreys F, Cox NH. Thiabendazole-induced erythema multiforme with lesions around melanocytic naevi. *Br J Dermatol* 1988; **118:** 855–6.

Precautions

Tiabendazole should be used with caution in patients with hepatic or renal impairment. Tiabendazole causes drowsiness in some patients and those affected should not drive or operate machinery.

Tiabendazole should not be used in mixed worm infections involving *Ascaris lumbricoides* as it can cause these roundworms to migrate; live roundworms have emerged through the mouth or nose.

Pregnancy. Tiabendazole is teratogenic in *mice* although there are no adequate and well controlled studies in human pregnancy.

Renal impairment. Tiabendazole and its 5-hydroxy metabolite did not accumulate in an anephric patient on haemodialysis and haemoperfusion who was treated for severe strongyloidiasis.[1] However, the potentially toxic conjugated glucuronide and sulfate metabolites did accumulate. The clearance of all 3 metabolites was poor by haemodialysis; haemoperfusion was much more efficient, although for rapid removal the haemoperfusion columns should be changed every hour.

1. Bauer L, *et al.* The pharmacokinetics of thiabendazole and its metabolites in an anephric patient undergoing hemodialysis and hemoperfusion. *J Clin Pharmacol* 1982; **22:** 276–80.

Interactions

Xanthines. For the effect of tiabendazole on serum concentrations of *theophylline*, see p.1145.

Pharmacokinetics

Tiabendazole is readily absorbed from the gastrointestinal tract and reaches peak concentrations in the plasma after 1 to 2 hours. It is metabolised to 5-hydroxythiabendazole and excreted principally in the urine as glucuronide or sulfate conjugates; about 90% is recovered in the urine within 48 hours of ingestion, but only 5% in the faeces. Absorption may occur from preparations applied to the skin or eyes.

◊ References.

1. Tocco DJ, *et al.* Absorption, metabolism, and excretion of thiabendazole in man and laboratory animals. *Toxicol Appl Pharmacol* 1966; **9:** 31–9.

Uses and Administration

Tiabendazole, a benzimidazole derivative, is an anthelmintic with activity against most nematode worms; activity against some larval stages and ova has also been demonstrated. The mode of action is not certain, but tiabendazole may inhibit the fumarate-reductase system of worms thereby interfering with their source of energy.

Tiabendazole is used in the treatment of cutaneous larva migrans, dracunculiasis (guinea worm infection),