into inactive oligopeptides, and then by aminopeptidases into free amino acids. Most of a dose is excreted in urine within 24 hours. The terminal half-life of tetracosactide is about 3 hours.

### Uses and Administration

Tetracosactide is a synthetic polypeptide with general properties similar to those of corticotropin (p.1524). Tetracosactide is used diagnostically to investigate adrenocortical insufficiency (p.1498).

Although tetracosactide, like corticotropin, has also been used therapeutically for most of the conditions in which systemic corticosteroid therapy is indicated, it is now rarely used for such indications.

Tetracosactide is usually used in the form of the acetate although doses are often expressed in terms of tetracosactide itself.

For diagnostic purposes tetracosactide acetate is used intramuscularly or intravenously as a plain injection in the first instance then, if results are inconclusive, intramuscularly as a long-acting depot injection. The initial test using the plain injection is based on the measurement of plasma-cortisol concentrations immediately before and exactly 30 minutes after an intramuscular or intravenous injection equivalent to 250 micrograms of tetracosactide; adrenocortical function may be regarded as normal if there is a rise in the cortisol concentration of at least 200 nanomoles/litre (70 micrograms/litre). A suggested intravenous dose in children has been 250 micrograms per 1.73 $m^2$.

If the results of this test are equivocal the long-acting depot preparation may be used, the adult dose being 1 mg of tetracosactide acetate given intramuscularly. Adrenocortical function is regarded as normal if plasma-cortisol concentrations have steadily increased to 1000 to 1800 nanomoles/litre 5 hours after the injection. A 3-day test, for example with 1 mg of the depot preparation given each morning, is also used to differentiate between primary and secondary adrenocortical insufficiency; this is preceded on the first day and followed on the fourth day by the test using the plain injection. A marked improvement in the second assessment suggests secondary adrenocortical insufficiency.

For therapeutic purposes tetracosactide acetate has been given by intramuscular injection as the long-acting depot preparation. The usual initial adult dose of tetracosactide acetate has been 1 mg daily (or 1 mg every 12 hours in acute cases), reduced after the acute symptoms have been controlled to 0.5 to 1 mg every 2 or 3 days or 1 mg weekly. For children aged 3 to 5 years, a dose of 250 to 500 micrograms intramuscularly has been given daily initially, and then every 2 to 8 days for maintenance. A dose of 0.25 to 1 mg has been used similarly in children aged 5 to 12 years.

Tetracosactide has also been used in children aged 1 month and older to manage infantile spasms in a dose of 500 micrograms by intramuscular injection given on alternate days and adjusted according to response.

◊ Reviews.


1. Dorin RI, *et al.* Diagnosis of adrenal insufficiency. *Ann Intern Med* 2003; **139:** 194–204.


**Post-dural puncture headache.** There are anecdotal reports of the relief of post-dural puncture headache by corticotropin or, more recently, tetracosactide.[1-5] Intramuscular injection and intravenous infusion have both been used, but a controlled study[6] in 18 women found that a single intramuscular dose of tetracosactide 1 mg was no more beneficial than sodium chloride 0.9%. As discussed on p.1851, many patients respond to conservative measures.


1. Collier BB. Treatment for post dural puncture headache. *Br J Anaesth* 1994; **72:** 366–7.
2. Foster P. ACTH treatment for post-lumbar puncture headache. *Br J Anaesth* 1994; **73:** 429.
3. Kshatri AM, Foster PA. Adrenocorticotropic hormone infusion as a novel treatment for postdural puncture headache. *Reg Anesth* 1997; **22:** 432–4.
4. Carter BL, Pasupuleti R. Use of intravenous cosyntropin in the treatment of postdural puncture headache. *Anesthesiology* 2000; **92:** 272–4.
5. Cánovas L, *et al.* Use of intravenous tetracosactin in the treatment of postdural puncture headache: our experience in forty cases. *Anesth Analg* 2002; **94:** 1369.
6. Rucklidge MWM, *et al.* Synacthen Depot for the treatment of postdural puncture headache. *Anaesthesia* 2004; **59:** 138–41.


### Preparations

***BP 2008:*** Tetracosactide Injection; Tetracosactide Zinc Injection.

**Proprietary Preparations** (details are given in Part 3)
***Austral.:*** Synacthen; ***Austria:*** Synacthen; ***Belg.:*** Synacthen; ***Canad.:*** Cortrosyn; Synacthen Depot; ***Chile:*** Synacthen; ***Cz.:*** Synacthen†; ***Denm.:*** Synacthen; ***Fr.:*** Synacthene; ***Ger.:*** Synacthen; Synacthen Depot; ***Gr.:*** Cortrosyn; Nuvacthen; Synacthene; ***Hong Kong:*** Cortrosyn; ***Irl.:*** Synacthen; ***Israel:*** Cortrosyn†; Synacthen; ***Ital.:*** Cortrosyn†; Synacthen; ***Neth.:*** Cortrosyn†; Synacthen; ***NZ:*** Synacthen; ***Port.:*** Synacthen; ***Rus.:*** Synacthen (Синактен); Synacthen Depot (Синактен Депо); ***S.Afr.:*** Synacthen Depot; ***Spain:*** Nuvacthen Depot; ***Swed.:*** Synacthen; ***Switz.:*** Synacthen; Synacthen Depot; ***Thai.:*** Cortrosyn; ***Turk.:*** Synacthen Depot; ***UK:*** Synacthen; Synacthen Depot; ***USA:*** Cortrosyn; ***Venez.:*** Synacthen.

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## Tixocortol Pivalate *(BANM, USAN, rINNM)* ⊗

JO-1016; Pivalato de tixocortol; Tixocortol, Pivalate de; Tixocortoli Pivalas. 11β,17α-Dihydroxy-21-mercaptopregn-4-ene-3,20-dione 21-pivalate.

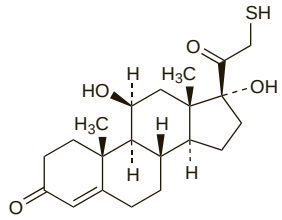
Тиксокортола Пивалат

$C_{26}H_{38}O_5S$ = 462.6.

*CAS — 61951-99-3 (tixocortol); 55560-96-8 (tixocortol pivalate).*

*ATC — A07EA05; R01AD07.*

*ATC Vet — QA07EA05; QR01AD07.*



*(tixocortol)*

### Profile

Tixocortol pivalate is a corticosteroid with mainly glucocorticoid activity (p.1490). It is used as buccal, nasal, throat, and rectal preparations. It is reported to undergo rapid first-pass metabolism, primarily in the liver, and to have minimal systemic effect.

### Preparations

**Proprietary Preparations** (details are given in Part 3)
***Belg.:*** Rhinovalon†; ***Fr.:*** Pivalone; ***Neth.:*** Pivalone†; Rectovalone†; ***Singapore:*** Pivalone; ***Spain:*** Tiovalone†; ***Switz.:*** Pivalone.

**Multi-ingredient:** ***Belg.:*** Rhinovalon Neomycine†; ***Fr.:*** Oropivalone Bacitracine†; Thiovalone; ***Singapore:*** Pivalone Neomycin†; ***Switz.:*** Oro-Pivalone; Pivalone compositum.

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# Triamcinolone *(BAN, rINN)* ⊗

9α-Fluoro-16α-hydroxyprednisolone; Fluoxiprednisolonum; Triamcinolon; Triamcinolona; Triamcinolonas; Triamcinolonum; Triamcynolon; Triamsinoloni. 9α-Fluoro-11β,16α,17α,21-tetrahydroxypregna-1,4-diene-3,20-dione.

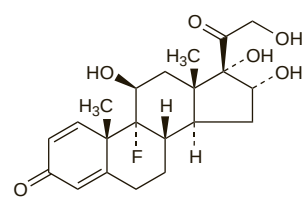
Триамцинолон

$C_{21}H_{27}FO_6$ = 394.4.

*CAS — 124-94-7.*

*ATC — A01AC01; D07AB09; H02AB08; R01AD11; R03BA06; S01BA05.*

*ATC Vet — QA01AC01; QD07AB09; QD07XB02; QH02AB08; QR01AD11; QR03BA06; QS01BA05.*



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

**Ph. Eur. 6.2** (Triamcinolone). A white or almost white, crystalline powder. It shows polymorphism. Practically insoluble in water and in dichloromethane; slightly soluble in methyl alcohol. Protect from light.

**USP 31** (Triamcinolone). A white or practically white, odourless, crystalline powder. Very slightly soluble in water, in chloroform, and in ether; slightly soluble in alcohol and in methyl alcohol.

## Triamcinolone Acetonide *(BANM, rINNM)* ⊗

Acetónido de triamcinolona; Triamcinolon acetonid; Triamcinolonacetonid; Triamcinolone, acétonide de; Triamcinoloni acetonidum; Triamcinolono acetonidas; Triamcynolonu acetonid; Triamsinolon Asetonid; Triamsinoloniasetonidi. 9α-Fluoro-11β,21-dihydroxy-16α,17α-isopropylidenedioxypregna-1,4-diene-3,20-dione.

Триамцинолона Ацетонид

$C_{24}H_{31}FO_6$ = 434.5.

*CAS — 76-25-5.*

*ATC — A01AC01; D07AB09; H02AB08; R01AD11; R03BA06; S01BA05.*

*ATC Vet — QA01AC01; QD07AB09; QH02AB08; QR01AD11; QR03BA06; QS01BA05.*

**Pharmacopoeias.** In *Chin.*, *Eur.* (see p.vii), *Jpn*, and *US.*
*Chin.* also includes Triamcinolone Acetonide Acetate.

**Ph. Eur. 6.2** (Triamcinolone Acetonide). A white or almost white, crystalline powder. It shows polymorphism. Practically insoluble in water; sparingly soluble in alcohol. Protect from light.

**USP 31** (Triamcinolone Acetonide). A white to cream-coloured crystalline powder, having not more than a slight odour. Practically insoluble in water; sparingly soluble in dehydrated alcohol, in chloroform, and in methyl alcohol. Store at a temperature of 25°, excursions permitted between 15° and 30°.

## Triamcinolone Acetonide Sodium Phosphate *(BANM, USAN, rINNM)* ⊗

CL-61965; CL-106359; Fosfato de sodio del acetónido de triamcinolona; Triamcinolone Acétonide, Phosphate Sodique de; Triamcinoloni Acetonidi Natrici Phosphas. Triamcinolone acetonide 21-disodium phosphate.

Триамцинолона Ацетонида Натрия Фосфат

$C_{24}H_{30}FNa_2O_9P$ = 558.4.

*CAS — 1997-15-5.*

*ATC — A01AC01; D07AB09; H02AB08; R01AD11; R03BA06; S01BA05.*

*ATC Vet — QA01AC01; QD07AB09; QH02AB08; QR01AD11; QR03BA06; QS01BA05.*

## Triamcinolone Diacetate *(BANM, rINNM)* ⊗

Diacetato de triamcinolona; Triamcinolone, Diacetate de; Triamcinoloni Diacetas. Triamcinolone 16α,21-diacetate.

Триамцинолона Диацетат

$C_{25}H_{31}FO_8$ = 478.5.

*CAS — 67-78-7.*

*ATC — A01AC01; D07AB09; H02AB08; R01AD11; R03BA06; S01BA05.*

*ATC Vet — QA01AC01; QD07AB09; QH02AB08; QR01AD11; QR03BA06; QS01BA05.*

**Pharmacopoeias.** In *US.*

**USP 31** (Triamcinolone Diacetate). A fine, white to off-white, crystalline powder, having not more than a slight odour. Practically insoluble in water; soluble 1 in 13 of alcohol, 1 in 80 of chloroform, and 1 in 40 of methyl alcohol; slightly soluble in ether.

## Triamcinolone Hexacetonide *(BAN, USAN, rINN)* ⊗

CL-34433; Hexacetónido de triamcinolona; TATBA; Triamcinolone Acetonide 21-(3,3-Dimethylbutyrate); Triamcinolone, hexacétonide de; Triamcinolonhexacetonid; Triamcinolon-hexacetonid; Triamcinoloni hexacetonidum; Triamcinolono heksacetonidas; Triamsinoloniheksasetonidi. 9α-Fluoro-11β,21-dihydroxy-16α,17α-isopropylidenedioxypregna-1,4-diene-3,20-dione 21-(3,3-dimethylbutyrate).

Триамцинолона Гексацетонид

$C_{30}H_{41}FO_7$ = 532.6.

*CAS — 5611-51-8.*

*ATC — A01AC01; D07AB09; H02AB08; R01AD11; R03BA06; S01BA05.*

*ATC Vet — QA01AC01; QD07AB09; QH02AB08; QR01AD11; QR03BA06; QS01BA05.*