Flumetasone Pivalate *(BANM, rINNM)* ⊗

Flumetason pivalát; Flumétasone, pivalate de; Flumetasoni pivalas; Flumetasonipivalaatti; Flumetasonpivalat; Flumetasonum Pivalas; Flumetazon Pivalat; Flumetazono pivalatas; Flumetazon-pivalát; Flumetazonu piwalan; Flumethasone Pivalate *(USAN)*; Flumethasone Trimethylacetate; NSC-107680; Pivalato de flumetasona. Flumethasone 21-pivalate.

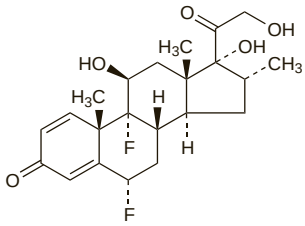
Флуметазона Пивалат

$C_{27}H_{36}F_2O_6$ = 494.6.

CAS — 2002-29-1.

ATC — D07AB03.

ATC Vet — QD07AB03.



(flumetasone)

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

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

USP 31 (Flumethasone Pivalate). A white to off-white crystalline powder. Insoluble in water; soluble 1 in 89 of alcohol, 1 in 350 of chloroform, and 1 in 2800 of ether; slightly soluble in methyl alcohol; very slightly soluble in dichloromethane. Store in airtight containers. Protect from light.

Profile

Flumetasone pivalate is a corticosteroid used topically for its glucocorticoid activity (p.1490) in the treatment of various skin disorders. It is usually used as a 0.02% cream, ointment, or lotion. When applied topically, particularly to large areas, when the skin is broken, or under occlusive dressings, corticosteroids may be absorbed in sufficient amounts to cause systemic effects (p.1490). The effects of topical corticosteroids on the skin are described on p.1492. For recommendations concerning the correct use of corticosteroids on the skin, and a rough guide to the clinical potencies of topical corticosteroids, see p.1497.

Flumetasone pivalate is also used in ear drops in a concentration of 0.02% with clioquinol 1%.

Preparations

USP 31: Flumethasone Pivalate Cream.

Proprietary Preparations (details are given in Part 3)

Belg.: Locacortene; ***Ger.:*** Cerson; Locacorten; ***Ital.:*** Locorten†; ***Neth.:*** Locacorten; ***Pol.:*** Lorinden; ***Switz.:*** Locacorten; ***Venez.:*** Lexifal†; Locorten†.

Multi-ingredient: ***Arg.:*** Locorten Vioformo†; Salena†; Tresite F; ***Austral.:*** Locacorten Vioform; ***Austria:*** Locacorten mit Neomycin; Locacorten Tar; Locacorten Vioform; Locasalen; ***Belg.:*** Locacortene Tar†; Locacortene Vioforme†; Locasalen; ***Braz.:*** Locorten Vioformio; Locorten†; Losalen; ***Canad.:*** Locacorten Vioform; ***Cz.:*** Locacorten Tar†; Lorinden A†; Lorinden C†; ***Denm.:*** Locacorten Vioform; ***Fin.:*** Locacorten Vioform; ***Fr.:*** Locacortene Vioforme; Locacortene†; Locasalene; Psocortene; ***Ger.:*** Locacorten Vioform; Locasalen; Lorinden T†; ***Gr.:*** Locacorten Neomycin†; Locasalene; ***Hong Kong:*** Locacorten Tar†; Locasalen; ***Hung.:*** Lorinden A; Lorinden C; ***Indon.:*** Locasalen; ***Israel:*** Locacorten with Neomycin†; Topicorten V; Topicorten-Tar; Topisalen; ***Ital.:*** Locorten; Locorten Vioformio; Losalen; Vasosterone Oto; ***Neth.:*** Locacorten Vioform; Locasalen; ***NZ:*** Locorten Vioform; ***Philipp.:*** Locasalen; ***Pol.:*** Lorinden A; Lorinden C; Lorinden N; ***Port.:*** Locorten Vioformio†; Losalen†; ***Rus.:*** Lorinden A (Лоринден А); Lorinden C (Лоринден С); ***S.Afr.:*** Locacorten Vioform; ***Spain:*** Losalen; ***Swed.:*** Locacorten Vioform; ***Switz.:*** Locasalen; ***Thai.:*** Flumasalen; Locasalen; ***Turk.:*** Locacortene Vioform; Locasalene; ***UK:*** Locorten Vioform; ***Venez.:*** Flutalon†; Locasalen; Locorten Vioformo.

Flunisolide *(BAN, USAN, rINN)* ⊗

Flunisolid; Flunisolida; Flunisolidi; Flunisolidum; RS-3999; RS-1320 (flunisolide acetate). 6α-Fluoro-11β,21-dihydroxy-16α,17α-isopropylidenedioxypregna-1,4-diene-3,20-dione.

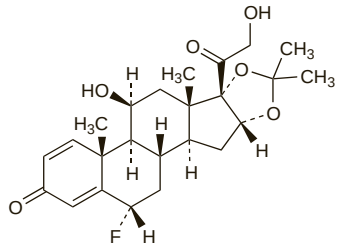
Флунизолид

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

CAS — 3385-03-3 (flunisolide); 77326-96-6 (flunisolide hemihydrate); 4533-89-5 (flunisolide acetate).

ATC — R01AD04; R03BA03.

ATC Vet — QR01AD04; QR03BA03.



Pharmacopoeias. In *US* which specifies the hemihydrate.

USP 31 (Flunisolide). A white to creamy-white crystalline powder. Practically insoluble in water; soluble in acetone; sparingly soluble in chloroform; slightly soluble in methyl alcohol.

Adverse Effects, Treatment, Withdrawal, and Precautions

As for corticosteroids in general (see p.1490).

Interactions

The interactions of corticosteroids in general are described on p.1494.

Pharmacokinetics

For a brief outline of the pharmacokinetics of corticosteroids, see p.1495. Flunisolide is reported to undergo extensive first-pass metabolism, with only 20% of the dose available systemically if it is given by mouth. The major metabolite, 6β-hydroxyflunisolide has some glucocorticoid activity; it has a half-life of about 4 hours. Only small amounts of flunisolide are absorbed after intranasal doses.

◊ References.

1. Chaplin MD, *et al.* Flunisolide metabolism and dynamics of a metabolite. *Clin Pharmacol Ther* 1980; **27:** 402–13.
2. Möllmann H, *et al.* Pharmacokinetic/pharmacodynamic evaluation of systemic effects of flunisolide after inhalation. *J Clin Pharmacol* 1997; **37:** 893–903.

Uses and Administration

Flunisolide is a corticosteroid with glucocorticoid activity (p.1490) used as a nasal spray for the prophylaxis and treatment of allergic rhinitis (p.565). In the UK a formulation containing 25 micrograms per metered spray is available, whereas in the USA each metered spray contains 29 micrograms flunisolide. In adults, the recommended starting dose is 2 sprays into each nostril twice daily, increased if necessary to three times daily, and then reduced for maintenance. In the USA a maximum dose of 8 sprays into each nostril daily has been established. For children aged from about 5 to 14 years, 1 spray into each nostril may be given up to 3 times daily; the USA also allows for an initial 2 sprays into each nostril twice daily (this is the recommended maximum of 4 sprays into each nostril daily).

Flunisolide is also used by inhalation from metered-dose aerosols in the management of asthma (p.1108). The usual adult dosage of flunisolide from an aerosol using chlorofluorocarbon (CFC) propellants is 500 micrograms inhaled twice daily. In severe asthma the dosage may be increased but should not exceed a total of 2 mg daily. A dose for children of 6 to 15 years of age is 500 micrograms inhaled twice daily, which should not be exceeded. A hydrofluoroalkane (CFC-free) aerosol, which is also available in some countries, has a lower dose because of different delivery characteristics. The usual adult dose, expressed as flunisolide hemihydrate, is 160 micrograms twice daily, which may be increased after 3 to 4 weeks but should not exceed 320 micrograms twice daily. In children aged 6 to 11 years of age a dose of 80 micrograms twice daily may be used, increased to a maximum of 160 micrograms twice daily if necessary.

Preparations

USP 31: Flunisolide Nasal Solution.

Proprietary Preparations (details are given in Part 3)

Arg.: Flunitec†; ***Austria:*** Pulmilide; ***Belg.:*** Syntaris; ***Canad.:*** Rhinalar†; ***Cz.:*** Bronilide†; Syntaris; ***Denm.:*** Locasyn†; ***Fr.:*** Nasalide; ***Ger.:*** Inhacort†; Syntaris; ***Gr.:*** Bronalide†; ***Irl.:*** Syntaris†; ***Ital.:*** Aerflu; Aerolid; Asmaflu; Assolid; Careflu; Charlyn; Citiflux; Desaflu; Doricoflu; Eliosid; Euroflu; Fluminex; Flunigar†; Flunitop; Gibiflu; Givair; Inalcort; Kaimil; Levonis; Lunibron; Lunis; Nebulcort; Nereflun; Nisolid; Nisoran; Pantasol†; Plaudit; Pulmist; Syntaris; Turm; Ventoflu; ***Neth.:*** Syntaris; ***Norw.:*** Lokilan; ***Switz.:*** Broncort†; Syntaris†; ***UK:*** Syntaris; ***USA:*** AeroBid; AeroSpan; Nasalide†; Nasarel.

Multi-ingredient: ***Ital.:*** Plenaer.

Fluocinolone Acetonide *(BANM, USAN, rINN)* ⊗

Acetónido de fluocinolona; 6α,9α-Difluoro-16α-hydroxyprednisolone Acetonide; Fluocinolon acetonid; Fluocinolonacetonid; Fluocinolon-acetonid; Fluocinolone, acétonide de; Fluocinoloni acetonidum; Fluocinolono acetonidas; Fluocynolonu acetonid; Fluosinoloniasetonidi; NSC-92339. 6α,9α-Difluoro-11β,21-dihydroxy-16α,17α-isopropylidenedioxypregna-1,4-diene-3,20-dione.

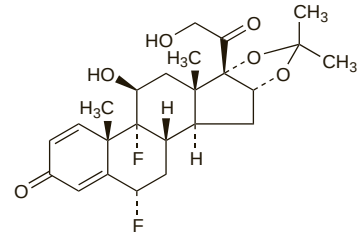
Флуоцинолона Ацетонид

$C_{24}H_{30}F_2O_6$ = 452.5.

CAS — 67-73-2.

ATC — C05AA10; D07AC04; S01BA15.

ATC Vet — QC05AA10; QD07AC04; QS01BA15.



Pharmacopoeias. In *Eur.* (see p.vii), *Jpn*, and *Viet. Br.* and *Viet.* have a separate monograph for the dihydrate; *US* allows either the anhydrous form or the dihydrate.

Ph. Eur. 6.2 (Fluocinolone Acetonide). A white or almost white, crystalline powder. It exhibits polymorphism. Practically insoluble in water; soluble in dehydrated alcohol and in acetone. Protect from light.

BP 2008 (Fluocinolone Acetonide Dihydrate). A white or almost white, crystalline powder. Practically insoluble in water and in hexane; soluble in dehydrated alcohol; freely soluble in acetone; sparingly soluble in dichloromethane and in methyl alcohol. Protect from light.

USP 31 (Fluocinolone Acetonide). It is anhydrous or contains two molecules of water of hydration. A white or practically white, odourless, crystalline powder. Insoluble in water; soluble 1 in 45 of alcohol, 1 in 25 of chloroform, and 1 in 350 of ether; soluble in methyl alcohol.

Profile

Fluocinolone acetonide is a corticosteroid used topically for its glucocorticoid activity (p.1490) in the treatment of various skin disorders. It is usually used as a cream, gel, lotion, ointment, or scalp application; concentrations normally range from 0.0025 to 0.025% although higher-strength preparations may be available. When applied topically, particularly to large areas, when the skin is broken, or under occlusive dressings, corticosteroids may be absorbed in sufficient amounts to cause systemic effects (p.1490). The effects of topical corticosteroids on the skin are described on p.1492. For recommendations concerning the correct use of corticosteroids on the skin, and a rough guide to the clinical potencies of topical corticosteroids, see p.1497.

Fluocinolone acetonide is also used topically with an antibacterial in the treatment of infective inflammatory eye, ear, and nose disorders.

A sterile implant of fluocinolone acetonide is used intravitreally for the treatment of chronic non-infectious posterior uveitis.

Formulation. The potency of fluocinolone acetonide varied with the formulation in a study[1] involving different *Synalar* topical preparations, the gel, ointment, and cream. The cream was the most potent followed by the gel, and then the ointment. A comparison of topical vasoconstrictor activity (used as an index of potency) unexpectedly found that the commercial dilutions of the cream (containing 0.00625% and 0.0025%) were indistinguishable in their effects from the full-strength (0.025%) cream.

1. Gao HY, Li Wan Po A. Topical formulations of fluocinolone acetonide: are creams, gels and ointments bioequivalent and does dilution affect activity? *Eur J Clin Pharmacol* 1994; **46:** 71–5.

Preparations

BP 2008: Fluocinolone Cream; Fluocinolone Ointment;

USP 31: Fluocinolone Acetonide Cream; Fluocinolone Acetonide Ointment; Fluocinolone Acetonide Topical Solution; Neomycin Sulfate and Fluocinolone Acetonide Cream.

Proprietary Preparations (details are given in Part 3)

Arg.: Duoflu; Flulone; ***Austria:*** Synalar; ***Belg.:*** Synalar; ***Canad.:*** Capex; Derma-Smoothe/FS; Fluoderm†; Synalar; ***Chile:*** Adermina; ***Cz.:*** Flucinar; Gelargin; Synalar†; ***Denm.:*** Synalar; ***Fr.:*** Synalar†; ***Ger.:*** Flucinar; Jellin; Jellisoft; ***Gr.:*** Synalar; ***Hong Kong:*** Cinotec†; Flunolone-V†; Synalar; ***Hung.:*** Flucinar; Synalar†; ***India:*** Flucort; Flucort-H; Luci; ***Indon.:*** Cinolon; Dermasolon; Esinol; Inoderm; Licosolon; ***Irl.:*** Synalar†; ***Israel:*** Dermalar; ***Ital.:*** Atoactive; Cortamide†; Dermobeta; Dermolin; Esacinone†; Fluocit; Fluomix Same; Fluovitef; Fluvean†; Localyn; Localyn SV; Omniderm; Ster-