

Fluorometholone Acetate (BANM, USAN, rINN) ⊗

Acetato de fluorometolona; Fluorométholone, Acétate de; Fluorometholoni Acetas; Fluorometolon Asetat; U-17323. Fluorometholone 17-acetate.

Флуорометолон Ацетат

$C_{24}H_{31}FO_5 = 418.5$.

CAS — 3801-06-7.

ATC — C05AA06; D07AB06; S01BA07.

ATC Vet — QC05AA06; QD07AB06; Q01BA07.

Pharmacopoeias. In US.

USP 31 (Fluorometholone Acetate).

Profile

Fluorometholone is a corticosteroid used for its glucocorticoid activity (p.1490), usually as eye drops containing 0.1%, in the treatment of allergic and inflammatory conditions of the eye. Fluorometholone acetate is used similarly.

Fluorometholone is also used topically in the treatment of various skin disorders.

Prolonged use of ophthalmic preparations containing corticosteroids has caused raised intra-ocular pressure and reduced visual function. 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, see p.1497.

Preparations

BP 2008: Fluorometholone Eye Drops;

USP 31: Fluorometholone Cream; Fluorometholone Ophthalmic Suspension; Neomycin Sulfate and Fluorometholone Ointment; Tobramycin and Fluorometholone Acetate Ophthalmic Suspension.

Proprietary Preparations (details are given in Part 3)

Arg.: Flarex; **FML:** Austral.; **Flucon;** **FML;** **Austria:** Flarex†; **Belg.:** Flucon; **FML:** **Braz.:** Florate; **Flumex;** **Flutinoi;** **Canada:** Flarex; **FML:** **Chile:** Aflarex; **Fluforte;** **Cz.:** Eflumidex; **Flarex;** **Flucon;** **Flumetol S†;** **Fluoropos;** **Denm.:** Flurolon; **Fin.:** FML; **Fr.:** Flucon; **Ger.:** Eflumidex; **Fluoro-** **Ophtal;** **Fluoropos;** **Isopito Flucon†;** **Gr.:** Flucon; **Fluxinam;** **FML:** Talirax†; **Hong Kong:** Flarex; **Flucon;** **Flumetholon;** **FML:** **Hung.:** Eflumidex; **Flarex;** **Flucon;** **India:** Flomex; **Floset;** **Indon.:** Flumetholon; **Irl.:** FML; **Israel:** Flarex; **FML;** **Ital.:** Flarex; **Flucon;** **Flumetol;** **Flumetol Semplic†;** **Malaysia:** Flarex; **FML†;** **Mex.:** Flarex; **Fluorte;** **Flumetol NF;** **Neth.:** Flarex; **FML;** **NZ:** Flarex†; **Flucon;** **FML:** **Philipp.:** Flarex; **Flulon;** **FML:** **Pol.:** Flarex; **Flucon;** **Port.:** Flurop; **FML:** **Rus.:** Flarex (Фларек); **S.Afr.:** Flucon; **FML;** **Singapore:** FML; **Spain:** FML; **Isopito Flucon;** **Switz.:** FML; **Thai.:** Flarex; **Flu Oph;** **Flucon;** **FML;** **Turk.:** Flarex; **FML:** **UK:** Flarex; **USA:** Eflone; **Flarex;** **Fluor-Op†;** **FML;** **Venez.:** Aflarex; **Flumetol.**

Multi-ingredient: **Arg.:** Delisan; **Efemolina;** **FML Neo;** **Larsimal;** **Nesbil-er†;** **Belg.:** Infectoflam; **Braz.:** Flumex N; **Chile:** Fluorte N†; **Cz.:** Infectoflam†; **Ger.:** Cibafam; **Efemolin;** **Eflumycin†;** **Gr.:** Efemoline; **FML Neo;** **Indocort†;** **Luzin;** **Hong Kong:** Efemoline; **India:** Flomex N; **Ital.:** Efemoline; **Flumecidina;** **Flumetol Antibiotico†;** **Flumezina;** **Gentacort;** **Malaysia:** Efemoline†; **Infectoflam†;** **Mex.:** Fluorte N; **Fluorometol;** **Philipp.:** Efemoline; **Infectoflam;** **Port.:** FML Neo; **Neo-Preocil;** **S.Afr.:** Efemoline; **FML Neo;** **Singapore:** Efemoline; **Infectoflam;** **Spain:** Bexicortil; **Cortisidin Urea;** **Flugen;** **Fluorvas;** **Switz.:** Efemoline; **FML Neo;** **Infectoflam;** **Thai.:** Efemoline; **FML Neo†;** **Infectoflam;** **Turk.:** Efemoline; **Flumetol;** **USA:** FML-S.

Fluprednidene Acetate (BANM, rINN) ⊗

Acetato de fluprednideno; Fluprednidène, Acétate de; Fluprednideni Acetas; Fluprednydene 21-Acetate. 9 α -Fluoro-11 β ,17 α ,21-trihydroxy-16-methylenepregna-1,4-diene-3,20-dione 21-acetate.

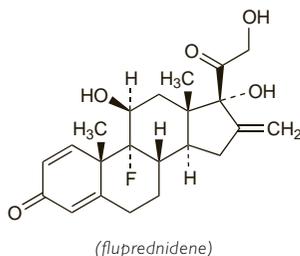
Флупреднидена Ацетат

$C_{24}H_{29}FO_6 = 432.5$.

CAS — 2193-87-5 (fluprednidene); 1255-35-2 (fluprednidene acetate).

ATC — D07AB07.

ATC Vet — QD07AB07.

**Profile**

Fluprednidene acetate is a corticosteroid used topically for its glucocorticoid activity (p.1490) in the treatment of various skin disorders. It is usually used as a 0.1% cream, or as an ointment containing 0.05% or 0.1%.

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.

The symbol † denotes a preparation no longer actively marketed

Preparations

Proprietary Preparations (details are given in Part 3)

Austria: Decoderm; **Belg.:** Decoderm; **Ger.:** Decoderm; **Indon.:** Decoderm; **Port.:** Crinohermal; **Swed.:** Corticoderm†; **Switz.:** Decoderm.

Multi-ingredient: **Arg.:** Tri-Emcortina†; **Austria:** Decoderm Compositum; **Decoderm** trivalent; **Belg.:** Decoderm Compositum; **Braz.:** Emecort†; **Pan-Emecort†;** **Ger.:** Candio-Hermal Plus; **Crinohermal** fem; **Decoderm Comp;** **Decoderm tri;** **Sali-Decoderm;** **Vobadern;** **Gr.:** Antimycotic; **Catrigel;** **Combi;** **Conazol;** **Domycotin;** **Edmudo;** **Expectine;** **Femella;** **Finicort;** **Flenazole;** **Fluniprol;** **Flunovon;** **Fosemy;** **Fumicon;** **Micoflup;** **Micogen;** **Milfer;** **Oxigon;** **Pandern;** **Pannmyk;** **Sarmel;** **Verdal;** **Indon.:** Decoderm 3; **Gentacortin†;** **Switz.:** Decoderm bivalent; **Thai.:** Supracortin 3†; **UK:** Acorvion Plus.

Fluticasone (BAN, rINN) ⊗

Fluticasona; Fluticasonum. S-(Fluoromethyl) 6 α ,9-difluoro-11 β ,17 α -dihydroxy-16 α -methyl-3-oxoandrosta-1,4-diene-17 β -carbothioate.

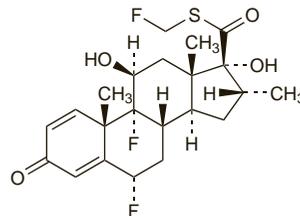
Флутиказон

$C_{22}H_{27}F_3O_4S = 444.5$.

CAS — 90566-53-3.

ATC — D07AC17; R01AD08; R03BA05.

ATC Vet — QD07AC17; QR01AD08; QR03BA05.

**Fluticasone Furoate** (BANM, USAN, rINN) ⊗

Fluticasonum Furoas; Furoate de Fluticasone; Furoato de Fluticasona; GVV-685698X. 6 α ,9-Difluoro-17-[(fluoromethyl)sulfonyl]carbonyl-11 β -hydroxy-16 α -methyl-3-oxoandrosta-1,4-diene-17 α -yl furan-2-carboxylate.

Флутиказон Фураат

$C_{27}H_{29}F_3O_5S = 538.6$.

CAS — 397864-44-7.

ATC — D07AC17; R01AD08; R01AD12; R03BA05.

ATC Vet — QD07AC17; QR01AD08; QR01AD12; QR03BA05.

Fluticasone Propionate (BANM, USAN, rINN) ⊗

CCI-18781; Fluticasone, propionate de; Fluticasoni propionas; Flutikasonipropionaat; Flutikasonpropionat; Flutikason-propionát; Flutikazon Propijonat; Flutikazono propionatas; Propionato de fluticasona. S-Fluoromethyl 6 α ,9 α -difluoro-11 β ,17 α -dihydroxy-16 α -methyl-3-oxoandrosta-1,4-diene-17 β -propionate.

Флутиказона Пропионат

$C_{25}H_{31}F_3O_5S = 500.6$.

CAS — 80474-14-2.

ATC — D07AC17; R01AD08; R03BA05.

ATC Vet — QD07AC17; QR01AD08; QR03BA05.

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

Ph. Eur. 6.2 (Fluticasone Propionate). A white or almost white powder. Practically insoluble in water; slightly soluble in alcohol; sparingly soluble in dichloromethane. Protect from light.

USP 31 (Fluticasone Propionate). Micronised fluticasone propionate is a fine white powder. Store in airtight containers at a temperature not exceeding 30°. Protect from light.

Adverse Effects, Treatment, Withdrawal, and Precautions

As for corticosteroids in general (see p.1490). Hypersensitivity reactions have occurred. Eosinophilic conditions, including Churg-Strauss syndrome, have been reported rarely, in most cases after a transfer from oral corticosteroid therapy.

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. Inhalation or nasal use of large amounts of fluticasone may produce systemic effects also (see below).

Adrenal suppression. Despite the fact that inhaled fluticasone is generally thought to lack systemic effects at therapeutic doses, a study in 25 healthy subjects¹ indicated that fluticasone propionate as single inhaled doses of 250, 500, and 1000 micrograms did produce a reduction in plasma cortisol, indicating suppression of

the hypothalamic-pituitary-adrenal axis to some degree. Others have also found evidence of adrenal suppression with fluticasone,²⁻⁵ particularly at high doses and in children,⁶ and the effect may be more marked with repeated than with single doses.^{4,6-8} A number of cases of adrenal crisis have been associated with high-dose inhaled fluticasone,^{9,10} including at least one fatality.⁶ It has been recommended that children using inhaled fluticasone at doses above 400 micrograms daily should have adrenal function monitoring and a written plan for emergency corticosteroid replacement therapy.⁶

1. Grahnen A, et al. An assessment of the systemic activity of single doses of inhaled fluticasone propionate in healthy volunteers. *Br J Clin Pharmacol* 1994; **38**: 521-5.
2. Clark DJ, et al. Comparative systemic bioactivity of inhaled budesonide and fluticasone propionate in asthmatic children. *Br J Clin Pharmacol* 1996; **42**: 264P.
3. Rohatagi S, et al. Dynamic modeling of cortisol reduction after inhaled administration of fluticasone propionate. *J Clin Pharmacol* 1996; **36**: 938-41.
4. Clark DJ, Lipworth BJ. Adrenal suppression with chronic dosing of fluticasone propionate compared with budesonide in adult asthmatic patients. *Thorax* 1997; **52**: 55-8.
5. Eid N, et al. Decreased morning serum cortisol levels in children with asthma treated with inhaled fluticasone propionate. *Pediatrics* 2002; **109**: 217-21.
6. Paton J, et al. Adrenal responses to low dose synthetic ACTH (Synacthen) in children receiving high dose inhaled fluticasone. *Arch Dis Child* 2006; **91**: 808-13.
7. Lönnebo A, et al. An assessment of the systemic effects of single and repeated doses of inhaled fluticasone propionate and inhaled budesonide in healthy volunteers. *Eur J Clin Pharmacol* 1996; **49**: 459-63.
8. Wilson AM, et al. Adrenal suppression with high doses of inhaled fluticasone propionate and triamcinolone acetonide in healthy volunteers. *Eur J Clin Pharmacol* 1997; **53**: 33-7.
9. Todd GRG, et al. Survey of adrenal crisis associated with inhaled corticosteroids in the United Kingdom. *Arch Dis Child* 2002; **87**: 457-61.
10. Adverse Drug Reactions Advisory Committee (ADRAC). Fluticasone and adrenal crisis. *Aust Adverse Drug React Bull* 2003; **22**: 6. Also available at: <http://www.tga.health.gov.au/adr/aadr/aadr0304.htm> (accessed 06/05/04)

Aspergillosis. The fungal infection aspergillosis has been reported in patients receiving inhaled^{1,2} and intranasal³ fluticasone.

1. Fairfax AJ, et al. Laryngeal aspergillosis following high dose inhaled fluticasone therapy for asthma. *Thorax* 1999; **54**: 860-1.
2. Leav BA, et al. Invasive pulmonary aspergillosis associated with high-dose inhaled fluticasone. *N Engl J Med* 2000; **343**: 586.
3. Bratton RL, et al. Aspergillosis related to long-term nasal corticosteroid use. *Mayo Clin Proc* 2002; **77**: 1353-7.

Effects on the bones. For studies of the effects on bone of inhaled fluticasone, compared with beclomethasone, see p.1516.

Effects on the muscles. Proximal myopathy has been reported in children receiving high-dose inhaled fluticasone;¹ the patients recovered after replacement of fluticasone with alternative corticosteroid therapy.

1. De Swert LF, et al. Myopathy in children receiving high-dose inhaled fluticasone. *N Engl J Med* 2004; **350**: 1157-9.

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.

Fluticasone propionate is poorly absorbed from the gastrointestinal tract and undergoes extensive first-pass metabolism; oral bioavailability is reported to be only about 1%.

◇ References

1. Mackie AE, et al. Pharmacokinetics of intravenous fluticasone propionate in healthy subjects. *Br J Clin Pharmacol* 1996; **41**: 539-42.
2. van Boxtel CJ, Sheffer AL, eds. The pharmacokinetics of fluticasone propionate. *Clin Pharmacokinet* 2000; **39** (suppl): 1-54.
3. Daley-Yates PT, Baker RC. Systemic bioavailability of fluticasone propionate administered as nasal drops and aqueous nasal spray formulations. *Br J Clin Pharmacol* 2001; **51**: 103-5.
4. Allen A, et al. Absolute bioavailability of intranasal fluticasone furoate in healthy subjects. *Clin Ther* 2007; **29**: 1415-20.

Uses and Administration

Fluticasone is a corticosteroid with mainly glucocorticoid activity (p.1490).

Fluticasone propionate is stated to exert a topical effect on the lungs without significant systemic effects at usual doses, due to its low systemic bioavailability (but see Adrenal Suppression, above). It is used by powder or aerosol inhalation for the prophylaxis of asthma. Typical initial doses in the UK range from 100 to 250 micrograms twice daily in mild asthma up to 1 mg twice daily in severe asthma, adjusted according to response. Children over 4 years of age may be given initial doses of 50 to 100 micrograms twice daily, increased to 200 micrograms twice daily if necessary.

The symbol ⊗ denotes a substance whose use may be restricted in certain sports (see p.vii)