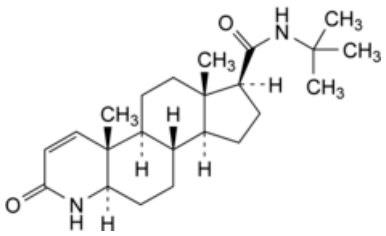
Edition: BP 2025 (Ph. Eur. 11.6 update)

Finasteride

General Notices

(Ph. Eur. monograph 1615)



$C_{23}H_{36}N_2O_2$ 372.6 *98319-26-7*

Action and use

5-Alpha reductase inhibitor; treatment of benign prostatic hyperplasia.

Preparation

Finasteride Tablets

Ph Eur

DEFINITION

N-(1,1-Dimethylethyl)-3-oxo-4-aza-5α-androst-1-ene-17β-carboxamide.

Content

98.0 per cent to 102.0 per cent (dried substance).

CHARACTERS

Appearance

White or almost white, crystalline powder.

Solubility

Practically insoluble in water, freely soluble in anhydrous ethanol and in methylene chloride.

It shows polymorphism (*5.9*).

IDENTIFICATION

Infrared absorption spectrophotometry (2.2.24).

Comparison *finasteride CRS*.

If the spectra obtained in the solid state show differences, dissolve the substance to be examined and the reference substance separately in *methanol R*, evaporate to dryness and record new spectra using the residues.

TESTS

Specific optical rotation (2.2.7)

+ 12.0 to + 14.0 (dried substance).

Dissolve 0.250 g in *methanol R* and dilute to 25.0 mL with the same solvent.

Related substances

Liquid chromatography (2.2.29).

Solvent mixture *acetonitrile R1*, *water for chromatography R* (50:50 *V/V*).

Test solution (a) Dissolve 25.0 mg of the substance to be examined in the solvent mixture and dilute to 50.0 mL with the solvent mixture.

Test solution (b) Dissolve 100.0 mg of the substance to be examined in the solvent mixture and dilute to 10.0 mL with the solvent mixture.

Reference solution (a) Dissolve 25.0 mg of *finasteride CRS* in the solvent mixture and dilute to 50.0 mL with the solvent mixture.

Reference solution (b) Dissolve 10 mg of *finasteride for peak identification CRS* (containing impurities A and C) in 1.0 mL of the solvent mixture.

Reference solution (c) Dilute 1.0 mL of test solution (b) to 100.0 mL with the solvent mixture. Dilute 1.0 mL of this solution to 10.0 mL with the solvent mixture.

Column:

— *size*: *l* = 0.25 m, Ø = 4.0 mm;

— *stationary phase*: *base-deactivated end-capped octadecylsilyl silica gel for chromatography R* (5 µm);

— *temperature*: 60 °C.

Mobile phase *acetonitrile R1*, *tetrahydrofuran R*, *water for chromatography R* (10:10:80 *V/V/V*).

Flow rate 1.5 mL/min.

Detection Spectrophotometer at 210 nm.

Injection 15 µL of test solution (b) and reference solutions (b) and (c).

Run time Twice the retention time of finasteride.

Identification of impurities Use the chromatogram supplied with *finasteride for peak identification CRS* and the chromatogram obtained with reference solution (b) to identify the peaks due to impurities A and C.

Relative retention With reference to finasteride (retention time = about 28 min): impurity A = about 0.9; impurity C = about 1.3.

System suitability:

— *signal-to-noise ratio*: minimum 40 for the principal peak in the chromatogram obtained with reference solution (c);

— *peak-to-valley ratio*: minimum 5, where H_p = height above the baseline of the peak due to impurity A and H_v = height above the baseline of the lowest point of the curve separating this peak from the peak due to finasteride in the chromatogram obtained with reference solution (b).

Calculation of percentage contents:

— *correction factor*: multiply the peak area of impurity A by 2.4;

— for each impurity, use the concentration of finasteride in reference solution (c).

Limits:

— *impurities A, C*: for each impurity, maximum 0.3 per cent;

— *unspecified impurities*: for each impurity, maximum 0.10 per cent;

— *total*: maximum 0.5 per cent;

— *reporting threshold*: 0.05 per cent.

Loss on drying (*2.2.32*)

Maximum 0.5 per cent, determined on 1.000 g by drying in an oven at 105 °C.

ASSAY

Liquid chromatography (*2.2.29*) as described in the test for related substances with the following modification.

Injection Test solution (a) and reference solution (a).

Calculate the percentage content of $C_{23}H_{36}N_2O_2$ taking into account the assigned content of *finasteride CRS*.

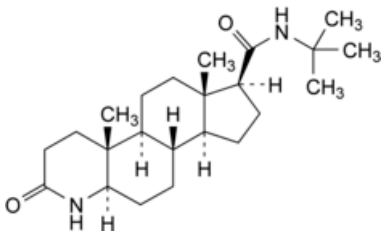
STORAGE

Protected from light.

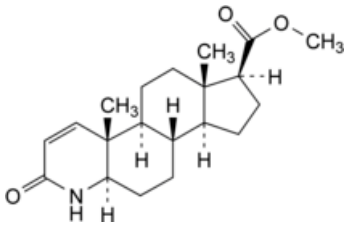
IMPURITIES

Specified impurities *A, C.*

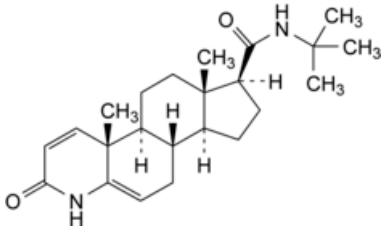
Other detectable impurities (the following substances would, if present at a sufficient level, be detected by one or other of the tests in the monograph. They are limited by the general acceptance criterion for other/unspecified impurities and/or by the general monograph Substances for pharmaceutical use (2034). It is therefore not necessary to identify these impurities for demonstration of compliance. See also 5.10. Control of impurities in substances for pharmaceutical use) *B.*



A. *N*-(1,1-dimethylethyl)-3-oxo-4-aza-5α-androstane-17β-carboxamide (dihydrofinasteride),



B. methyl 3-oxo-4-aza-5α-androst-1-ene-17β-carboxylate,



C. *N*-(1,1-dimethylethyl)-3-oxo-4-azaandrosta-1,5-diene-17β-carboxamide (Δ5-finasteride).

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