DEPARTMENT OF DRUG ADMINISTRATION
National Medicines Laboratory
ANALYTICAL METHOD VALIDATION COMMITTEE

Dutasteride Tablets

Analytical Profile No.: DUT 075/076/AP036

Dutasteride Tablets contain not less than 90 per cent and not more than 110 per cent of the stated amount of Dutasteride.

1. Identification:

In the Assay, the principle peak in the chromatogram obtained with the test solution corresponds to the peak in the chromatogram obtained with the reference solution.

Tests

2. Dissolution: *Determine by Liquid Chromatography*

2.1 Dissolution Parameters:

Apparatus: Paddle

Medium: 450 ml of medium A for first 25 minutes followed by addition of 450 ml of medium B.

Medium A: To 1000 ml of 0.1 M hydrochloric acid, add and dissolve 1.6 g of Pepsin (label activity 1:3000)

Medium B: To 1000 ml of 0.1 M hydrochloric acid, add and dissolve 40 g of sodium lauryl sulphate

Speed and Time: 50 rpm and 60 minutes

Withdraw a suitable volume of the medium and filter

2.2 Test Solution: Dilute the filtrate, if necessary, with a mixture of equal volumes of medium A and medium B. Filter the resulting solution through 0.2 µm membrane filter.

2.3 Reference Solution: A 0.005 percent w/v solution of Dutasteride reference standard in the solvent mixture. Dilute 1.0 ml of this solution to 100 ml with a mixture of equal volumes of medium A and medium B. Filter the resulting solution through 0.2 µm membrane filter.

Solvent Mixture: 75 volumes of acetonitrile and 25 volumes of water

2.4 Chromatographic system

Column: C18 (15 cm x 4.6 mm)

Flow rate: 1.5 ml/min

Injection volume: 100 µl

Wavelength: 215 nm

Detector: UV

Column Temperature: 50˚ C

Mobile Phase A: 0.1% v/v orthophosphoric acid

Mobile Phase B: Acetonitrile

Use gradient programming using the conditions given below

Time (in min)	Mobile Phase A (percent v/v)	Mobile Phase B (percent v/v)
0	50	50
14	50	50
15	20	80
20	20	80
22	50	50

2.5 Procedure: Inject the reference solution five times as per above mentioned chromatographic conditions. The test is not valid unless the column efficiency is not less than 2000 theoretical plates, tailing factor is not more than 2.0 and the relative standard deviation for replicate injections in not more than 2.0 %. Inject the test solution. Calculate the per cent release of Dutasteride in each tablet.

2.6 Limit: Not less than 80.0 percent (D) of the stated amount of Dutasteride.

3. Uniformity of Content: *Determine by Liquid Chromatography*.

3.1 Test Solution: Weigh 10 tablets individually and place one tablet individually in 50 ml volumetric flask. Disperse in 12.5 ml of water, add 25 ml of acetonitrile and sonicate for 10 minute and dilute to 50 ml with acetonitrile. Filter the resulting solution through 0.2 µm membrane filter.

3.2 Reference Solution: Same as Assay

3.3 Chromatographic system and procedure: Proceed as directed under the Assay

3.4 Limit: 85 % - 115 % of the stated amount

4. Assay: *Determine by Liquid Chromatography*

4.1 Solvent Mixture: 75 volumes of acetonitrile and 25 volumes of water

4.2 Test Solution: Weigh and place 5 intact tablets into 50 ml volumetric flask. Disperse in 12.5 ml of water, add 25 ml of acetonitrile and sonicate for 10 minute and dilute to 50 ml with acetonitrile. Filter the resulting solution through 0.2 µm membrane filter.

4.3 Reference Solution: A 0.005 percent w/v solution of Dutasteride reference standard in the solvent mixture. Filter the resulting solution through 0.2 µm membrane filter.

4.4 Chromatographic system

Column: C18 (15 cm x 4.6 mm)
Flow rate: 1.5 ml/min
Injection volume: 20 µl
Wavelength: 275 nm
Detector: UV
Column Temperature: 35˚ C
Mobile Phase A: 0.1% v/v orthophosphoric acid
Mobile Phase B: Acetonitrile

Use gradient programming using the conditions given below

Time (in min)	Mobile Phase A (% v/v)	Mobile Phase B (% v/v)
0	45	55
10	45	55
11	20	80
15	20	80
16	45	55
22	45	55

4.5 Procedure: Inject the reference solution five times as per above mentioned chromatographic conditions. The test is not valid unless the column efficiency is not less than 2000 theoretical plates, tailing factor is not more than 2.0 and the relative standard deviation for replicate injections in not more than 2.0 %. Inject the test solution. Calculate the content of Dutasteride in each tablets.

5. Other tests: As per pharmacopoeial requirements.