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

Allopurinol Tablets

General Notices

Action and use

Xanthine oxidase inhibitor; treatment of gout and hyperuricaemia.

DEFINITION

Allopurinol Tablets contain Allopurinol.

The tablets comply with the requirements stated under Tablets and with the following requirements.

Content of allopurinol, $C_5H_4N_4O$

92.5 to 107.5% of the stated amount.

IDENTIFICATION

A. The *light absorption*, Appendix II B, in the range 230 to 350 nm of the solution obtained in the Assay exhibits a maximum only at 250 nm.
B. Shake a quantity of the powdered tablets containing 0.1 g of Allopurinol with 5 mL of 1.25M *sodium hydroxide* and add 3 mL of *phosphomolybdotungstic reagent* and 5 mL of a 20% w/v solution of *sodium carbonate*. A greyish blue colour is produced.

TESTS

Related substances

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions.

(1) Mix with the aid of ultrasound a quantity of the powdered tablets containing 0.1 g of Allopurinol with 10 mL of 0.1M *sodium hydroxide* for about 1 minute, immediately dilute to 200 mL with mobile phase A and filter (Whatman GF/C is suitable).
(2) Dilute 1 volume of solution (1) to 100 volumes with mobile phase A and further dilute 1 volume to 10 volumes with mobile phase A.
(3) Dissolve 10 mg of *allopurinol impurity A BPCRS* and 5 mg each of *allopurinol impurity B BPCRS*, *allopurinol impurity C BPCRS*, *allopurinol impurity D BPCRS* and *allopurinol impurity E BPCRS* in mobile phase A. Add 20 mL of solution (1) and immediately dilute to 100 mL with mobile phase A. Dilute 1 mL of the resulting solution to 100 mL with mobile phase A.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *octadecylsilyl silica gel for chromatography* (5 µm) (Nucleosil C18 5µ is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.

(d) Use an ambient column temperature.
(e) Use a detection wavelength of 230 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

Mobile phase A A mixture of 1 volume of *methanol* and 9 volumes of a 0.125% w/v solution of *potassium dihydrogen orthophosphate*.

Mobile phase B A mixture of 3 volumes of *methanol* with 7 volumes of a 0.125% w/v solution of *potassium dihydrogen orthophosphate*.

Time (Minutes)	Mobile phase A%	Mobile phase B%	Comment
0-30	100→0	0→100	linear gradient
30-40	0	100	isocratic

SYSTEM SUITABILITY

The test is not valid unless in solution (3) the *resolution factor* between the peaks corresponding to impurity A and allopurinol is at least 3.

Inject solution (3). When the chromatogram is recorded in the prescribed conditions, the retention times are: impurity A, about 4.2 minutes; impurities B and C, about 6.1 minutes; allopurinol, about 7.7 minutes; impurity D, about 26.1 minutes; impurity E, about 27.8 minutes. Inject solution (1) and solution (2). Continue the chromatography of solution (1) for 5 times the retention time of allopurinol.

LIMITS

In the chromatogram obtained with solution (1):

the area of any peak corresponding to impurity A is not greater than the area of the corresponding peak in the chromatogram obtained with solution (3) (0.2%);

the area of any unresolved double peak corresponding to impurities B and C is not greater than the area of the corresponding double peak in the chromatogram obtained with solution (3) (0.2%);

the area of any peaks corresponding to impurity D or impurity E is not greater than the area of the corresponding peak in the chromatogram obtained with solution (3) (0.1%);

the area of any other *secondary peak* is not greater than the area of the peak due to allopurinol in the chromatogram obtained with solution (2) (0.1%);

the sum of the areas of any other *secondary peaks* is not greater than 3 times the area of the peak due to allopurinol in the chromatogram obtained with solution (2) (0.3%).

Disregard any peak with an area less than 0.2 times that of the peak due to allopurinol in the chromatogram obtained with solution (2) (0.02%).

ASSAY

Weigh and powder 20 tablets. Shake a quantity of the powder containing 0.1 g of Allopurinol with 20 mL of 0.05M *sodium hydroxide* for 20 minutes, add 80 mL of 0.1M *hydrochloric acid*, shake for 10 minutes, add sufficient 0.1M *hydrochloric acid* to produce 250 mL, filter and dilute 10 mL of the filtrate to 250 mL with 0.1M *hydrochloric acid*. Measure the *absorbance* of the resulting solution at the maximum at 250 nm, Appendix II B, using 0.1M *hydrochloric acid* in the reference cell. Calculate the content of $C_5H_4N_4O$ taking 563 as the value of A (1%, 1 cm) at the maximum at 250 nm.