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

Phenobarbital Tablets

General Notices

Phenobarbital Tablets from different manufacturers, whilst complying with the requirements of the monograph, are not interchangeable.

Action and use

Barbiturate.

DEFINITION

Phenobarbital Tablets contain Phenobarbital.

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

Content of phenobarbital, $C_{12}H_{12}N_2O_3$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

Weigh and powder 20 tablets. Extract a quantity of the powder containing 0.3 g of Phenobarbital in a continuous extraction apparatus with *ether* until complete extraction is achieved. Remove the ether and dry the residue of phenobarbital to constant weight at 105°. Heat 0.2 g of the residue on a water bath with 15 mL of *ethanol (25%)* until dissolved, filter while hot and allow the filtrate to cool. Filter, wash the crystals with a small quantity of *ethanol (25%)* and dry at 105°. The *infrared absorption spectrum* of the residue, Appendix II A, is concordant with the reference spectrum of phenobarbital *(RS 270)*. If the spectra obtained are not concordant, heat the residue in a sealed tube at 105° for 1 hour and prepare a new spectrum of the residue.

TESTS

Related substances

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

(1) Shake a quantity of the powdered tablets containing 100 mg of Phenobarbital with 100 mL of the mobile phase and filter.
(2) Dilute 1 volume of solution (1) to 10 volumes with the mobile phase. Dilute 1 volume of the resulting solution to 50 volumes with the mobile phase.
(3) 0.0005% w/v of *phenobarbital impurity A EPCRS* and 0.0005% w/v of *phenobarbital impurity B EPCRS* in the mobile phase.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *octadecylsilyl silica gel for chromatography* (5µm) (Spherisorb ODS 2 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1.0 mL per minute.
(d) Use an ambient column temperature.

(e) Use a detection wavelength of 254 nm.
(f) Inject 20 µL of each solution.
(g) Allow the chromatography to proceed for twice the retention time of phenobarbital.

MOBILE PHASE

25 volumes of *acetonitrile* and 75 volumes of a solution of 0.66% w/v of *sodium acetate* in *water*, adjusted to pH 4.5 using *glacial acetic acid*.

When the chromatograms are recorded under the prescribed conditions the retention times relative to phenobarbital (retention time, about 9 minutes) are: impurity A, about 0.4; impurity B, about 0.5.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks due to impurity A and impurity B is at least 1.5.

LIMITS

In the chromatogram obtained with solution (1):

the area of any *secondary peak* is not greater than the area of the principal peak in the chromatogram obtained with solution (2) (0.2%);

the sum of the areas of all *secondary peaks* is not greater than 2.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.5%).

Disregard any peak with an area less than 0.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.1%).

ASSAY

Weigh and powder 20 tablets. Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions in the mobile phase.

(1) Shake a quantity of the powdered tablets containing 100 mg of Phenobarbital with 80 mL of the mobile phase, dilute to 100 mL with the mobile phase and filter. Dilute 1 volume of the resulting solution to 10 volumes with the mobile phase.
(2) 0.01% of *phenobarbital BPCRS* in the mobile phase.
(3) 0.0005% w/v of *phenobarbital impurity A EPCRS* and 0.0005% w/v of *phenobarbital impurity B EPCRS* in the mobile phase.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions described under the Related substances may be used.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks due to impurity A and impurity B is at least 1.5.

DETERMINATION OF CONTENT

Calculate the content of $C_{12}H_{12}N_2O_3$ in the tablets from the chromatograms obtained using the declared content of $C_{12}H_{12}N_2O_3$ in *phenobarbital BPCRS*.