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

Phenylbutazone Tablets

General Notices

Action and use

Cyclo-oxygenase inhibitor; pyrazolone analgesic.

DEFINITION

Phenylbutazone Tablets contain Phenylbutazone. They are coated.

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

Content of phenylbutazone, $C_{19}H_{20}N_2O_2$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

Extract a quantity of the powdered tablets containing 0.2 g of Phenylbutazone with 40 mL of warm *acetone*, filter and evaporate the filtrate to dryness. The residue complies with the following tests.

A. The *infrared absorption spectrum*, Appendix II A, is concordant with the *reference spectrum* of phenylbutazone *(RSV 35)*.
B. To 0.1 g of the residue add 1 mL of *glacial acetic acid* and 2 mL of *hydrochloric acid* and heat on a water bath for 30 minutes. Cool, add 10 mL of *water* and filter. Add to the filtrate 3 mL of 0.1M *sodium nitrite*; a yellow colour is produced. Add 1 mL of this solution to 5 mL of *2-naphthol solution*; a brownish red precipitate is produced which dissolves on the addition of *ethanol (96%)* yielding a red solution.

TESTS

Dissolution

Comply with the requirements for Monographs of the British Pharmacopoeia in the *dissolution test for tablets and capsules*, Appendix XII B1.

TEST CONDITIONS

(a) Use Apparatus 1, rotating the basket at 100 revolutions per minute.
(b) Use 900 mL of a 0.68% w/v solution of *potassium dihydrogen orthophosphate* adjusted to pH 7.5 with 1M *sodium hydroxide*, at a temperature of 37°, as the medium.

PROCEDURE

After 45 minutes withdraw a 10 mL sample of the medium and measure the *absorbance* of the filtered sample, suitably diluted with the dissolution medium if necessary, at the maximum at 264 nm, Appendix II B using the dissolution medium in

the reference cell.

DETERMINATION OF CONTENT

Calculate the total content of phenylbutazone, $C_{19}H_{20}N_2O_2$, in the medium taking 653 as the value of A(1%, 1 cm) at the maximum at 264 nm.

Related substances

Carry out the method for *thin-layer chromatography*, Appendix III A, using the following solutions.

(1) Shake a quantity of the powdered tablets containing 0.1 g of Phenylbutazone with 3 mL of *chloroform* containing 0.02% w/v of *butylated hydroxytoluene*, centrifuge and use the supernatant liquid.
(2) Dilute 1 volume of solution (1) with sufficient of the same solvent mixture to produce a solution containing 0.5 mg of Phenylbutazone per mL.

CHROMATOGRAPHIC CONDITIONS

(a) Use as the coating *silica gel GF_{254}* (Machery Nagel plates are suitable). Prior to applying solutions (1) and (2), pre-treat the plate with the mobile phase allowing the solvent front to ascend 4 cm, remove the plate and dry it in a current of cold air.
(b) Use fresh mobile phase as described below.
(c) Without delay and in an atmosphere of carbon dioxide apply 3 µL of each solution. Expose the plate to carbon dioxide for 2 minutes.
(d) Develop the plate to 10 cm.
(e) After removal of the plate, allow it to dry in air and examine under *ultraviolet light (254 nm)*.

MOBILE PHASE

10 volumes of *glacial acetic acid*, 40 volumes of *cyclohexane* and 50 volumes of *chloroform* containing 0.02% v/v of *butylated hydroxytoluene*.

LIMITS

Any *secondary spot* in the chromatogram obtained with solution (1) is not more intense than the spot in the chromatogram obtained with solution (2) (1.5%).

ASSAY

Weigh and powder 20 tablets. Extract a quantity of the powder containing 0.5 g of Phenylbutazone with successive 30-, 30-, 15- and 15-mL quantities of warm *acetone*. Filter the combined extracts, cool and titrate with *0.1M sodium hydroxide VS* using *bromothymol blue solution R3* as indicator and continuing the titration until the blue colour persists for at least 30 seconds. Repeat the titration without the powdered tablets; the difference between the titrations represents the amount of alkali required by the phenylbutazone. Each mL of *0.1M sodium hydroxide VS* is equivalent to 30.84 mg of $C_{19}H_{20}N_2O_2$.