Chlorphenamine hydrogen maleate tablets (Chlorphenamini hydrogenomaleatis compressi)

Other name. Chlorpheniramine hydrogen maleate tablets.

Category. Antiallergic drug.

Storage. Chlorphenamine hydrogen maleate tablets should be kept in a tightly closed container.

Requirements

Comply with the monograph for *Tablets*.

Chlorphenamine hydrogen maleate tablets contain not less than 90.0% and not more than 110.0% of the amount of $C_{16}H_{19}ClN_2$,$C_4H_4O_4$ stated on the label.

Identity tests

-Either tests A and C or tests B and C may be applied.

A. Triturate a quantity of the powdered tablets equivalent to 25 mg of Chlorphenamine hydrogen maleate with 20 mL of hydrochloric acid (~70 g/l) TS. Separately dissolve 25 mg of Chlorphenamine hydrogen maleate RS in 20 mL of hydrochloric acid (~70 g/l) TS. To each solution add sufficient sodium hydroxide (~80 g/l) TS to render them alkaline to a pH of about 11, then extract with two 50 mL portions of hexane R. Collect the extracts in beakers and evaporate to dryness. Carry out the examination with the residues as described under *1.7 Spectrophotometry in the infrared region*. The infrared absorption spectrum of the sample being examined is concordant with the spectrum obtained from Chlorphenamine hydrogen maleate RS.

B. See the test described below under "Related substances". Under an ultraviolet light the two principal spots obtained with solution A correspond in position, appearance and intensity with those obtained with solution B. After spraying the principal spot obtained with solution A corresponds to that obtained with solution B.

C. To a quantity of the powdered tablets equivalent to 40 mg of Chlorphenamine hydrogen maleate add about 20 mL of water, warm the mixture and filter. To the filtrate add 10 mL of a saturated solution of trinitrophenol R in water and warm on a water-bath for 5 minutes; a precipitate is produced. Filter, wash the precipitate with water, collect the precipitate and dry it at 105 °C for 1 hour; melting behaviour, about 196 °C with decomposition.

Related substances

Carry out the test as described under *1.14.1 Thin-layer chromatography* using silica gel R2 as the coating substance and heating the coated plate at 105 °C for 30 minutes. Use as the mobile phase a mixture of 5 volumes of ethyl acetate R, 3 volumes of methanol R and 2 volumes of acetic acid (~60 g/l) TS. Apply separately to the plate 2 µl of each of the following four solutions. For solution (A) extract a quantity of the powdered tablets equivalent to 5 mg of Chlorphenamine hydrogen maleate with chloroform R, filter, evaporate the filtrate to dryness and dissolve the residue in 1 mL of chloroform R. For solution (B) dissolve 25 mg of chlorphenamine hydrogen maleate RS in 5 mL of chloroform R. For solution (C) extract a quantity of the powdered tablets equivalent to 50 mg of Chlorphenamine hydrogen maleate with chloroform R, filter, evaporate the filtrate to dryness and dissolve the residue in 1 mL of chloroform R. For solution (D) dilute 0.2 mL of solution C to 100 mL with chloroform R. After removing the plate from the chromatographic chamber allow it to dry in air and examine the chromatogram in ultraviolet light (254 nm) for identification purposes, then spray it with potassium iodobismuthate TS2.

Any spot obtained with solution C, other than the principal spot, is not more intense than that obtained with solution D.

Assay

Weigh and powder 20 tablets. Shake a quantity of the powder equivalent to about 3 mg of Chlorphenamine hydrogen maleate, accurately weighed, with 20 mL of sulfuric acid (0.05 mol/l) VS for 5 minutes. Add 20 mL of hexane R, shake carefully and filter the acid layer into a second separator. Extract the hexane layer with two quantities, each of 10 mL, of sulfuric acid (0.05 mol/l) VS, filtering each acid layer into the second separator, and wash the filter with sulfuric acid (0.05 mol/l) VS. Add sodium hydroxide (1 mol/l) VS to the acid extracts and washings to make the solution just alkaline to litmus paper R, add 2 mL in excess and extract with two quantities, each of 50 mL, of hexane R. Wash each hexane extract with the same 20 mL of water and extract in succession with 20 mL, 20 mL and 5 mL of sulfuric acid (0.25 mol/l) VS. Dilute the combined acid extracts to 50 mL with sulfuric acid (0.25 mol/l) VS and dilute 10 mL to 25 mL with the same acid.

Measure the absorbance of this solution in a 1 cm layer at the maximum at about 265 nm. Calculate the content of $C_{16}H_{19}ClN_2$,$C_4H_4O_4$, using the absorptivity value of 21.2 ($A^{1\%}_{1cm}$ = 212).

Uniformity of content

Individually transfer 10 powdered tablets to 10 separate stoppered test-tubes, and shake with 20 mL of sulfuric acid (0.05 mol/l)

VS for 5 minutes. Add 20 mL of hexane R, shake carefully and filter the acid layer into a second separator. Extract the hexane layer with two quantities, each of 10 mL, of sulfuric acid (0.05 mol/l) VS, filtering each acid layer into the second separator, and wash the filter with sulfuric acid (0.05 mol/l) VS. Add sodium hydroxide (1 mol/l) VS to the acid extracts and washings to make the solution just alkaline to litmus paper R, add 2 mL in excess and extract with two quantities, each of 50 mL, of hexane R. Wash each hexane extract with the same 20 mL of water, and extract in succession with 20 mL, 20 mL, and 5 mL of sulfuric acid (0.25 mol/l) VS. Dilute the combined acid extracts to 50 mL with sulfuric acid (0.25 mol/l) VS, dilute 10 mL to 25 mL with the same acid.

Measure the absorbance of this solution in a 1 cm layer at the maximum at about 265 nm. Calculate the content of $C_{16}H_{19}ClN_2$,$C_4H_4O_4$, using the absorptivity value of 21.2 ($A^{1\%}_{1cm}$ = 212).

The tablets comply with the test for *5.1 Uniformity of content for single-dose preparations*.