Atropine sulfate tablets (Atropini sulfatis compressi)

Category. Antispasmodic drug.

Additional information. Strength in the current WHO Model list of essential medicines: 1 mg.

Requirements

Comply with the monograph for "Tablets".

Atropine sulfate tablets contain not less than **90.0%** and not more than **110.0%** of the amount of $(C_{17}H_{23}NO_3)_2,H_2SO_4,H_2O$ stated on the label.

Identity tests

A. Carry out the test as described under 1.14.1 Thin-layer chromatography, using silica gel R1 as the coating substance and a mixture of 5 volumes of chloroform R, 4 volumes of acetone R, and 1 volume of diethylamine R as the mobile phase. Apply separately to the plate 5 µl of each of the following two solutions. For solution (A) shake a quantity of the powdered tablets equivalent to 10 mg of Atropine sulfate with 2 mL of ethanol (~750 g/l) TS, centrifuge, and use the supernatant liquid. For solution (B) dissolve 25 mg of atropine sulfate RS in 5 mL of ethanol (~750 g/l) TS. After removing the plate from the chromatographic chamber, heat it at 105 °C for 20 minutes, allow to cool, and spray with potassium iodobismuthate TS2. Examine the chromatogram in daylight.

The principal spot obtained with solution A corresponds in position, appearance, and intensity with that obtained with solution B.

B. Triturate a quantity of the powdered tablets equivalent to 1 mg of Atropine sulfate with 1 drop of ammonia (~260 g/l) TS, add 2 mL of chloroform R, and triturate again thoroughly. Filter the chloroform layer and evaporate. To the residue add about 0.2 mL of fuming nitric acid R and evaporate to dryness on a water-bath; a yellow residue is obtained. To the cooled residue add 2 mL of acetone R and about 0.2 mL of potassium hydroxide/methanol TS; a deep violet colour is produced.

C. A filtered solution of the powdered tablets in water yields the reactions described under 2.1 General identification tests as characteristic of sulfates.

Assay. Weigh and powder 20 tablets. Transfer a quantity of the powder equivalent to about 2.5 mg of Atropine sulfate, accurately weighed, into a 50-mL volumetric flask, add 30 mL of water, shake well, dilute to volume, and filter. Discard the first few mL of filtrate and use the successive clear filtrate as the *test solution*. For the *reference solution* use 25 mg of atropine sulfate RS, accurately weighed and previously dried to constant mass at 120 °C, dissolve in sufficient water to produce 25 mL, and mix well. Dilute 5 mL of this solution to 100 mL with water (= 50 µg of anhydrous atropine sulfate per mL). Transfer 2 mL of each of the *test solution* and the *reference solution* to two 60-mL separating funnels containing 10 mL of chloroform R. Add 2 mL of bromocresol green TS1, shake for 2 minutes, and allow to stand until two layers are formed.

Measure the absorbance of the chloroform layers of the *test solution* and the *reference solution* at the maximum at about 420 nm against a solvent cell containing chloroform R.

Calculate the amount in mg of $(C_{17}H_{23}NO_3)_2,H_2SO_4,H_2O$ in the sample being examined using the following formula: $1.027\ (M/10)(A_u/A_s)$, in which M is the mass in mg of atropine sulfate RS in the *reference solution* and A_u and A_s are the absorbances for the *test solution* and the *reference solution*, respectively.

Uniformity of content. Individually transfer 10 powdered tablets to 10 separate stoppered test-tubes, to each add 6 mL of water, accurately measured, shake thoroughly for 30 minutes, centrifuge, and use the clear solution as the *test solution.* For the *reference solution* weigh accurately 25 mg of atropine sulfate RS, previously dried to constant mass at 120 °C, dissolve in sufficient water to produce 25 mL, and mix well. Dilute 5 mL of this solution to 100 mL with water (= 50 µg of anhydrous atropine sulfate per mL). Transfer 2 mL of each of the *solutions to be examined* and the *reference solution* to two 60-mL separating funnels containing 10 mL of chloroform R. Add 2 mL of bromocresol green TS1, shake for 2 minutes, and allow to stand until two layers are formed.

Measure the absorbance of the chloroform layers of the *solutions to be examined* and the *reference solution* at the maximum at about 420 nm against a solvent cell containing chloroform R. Calculate the content of $(C_{17}H_{23}NO_3)_2,H_2SO_4,H_2O$ in mg, using the following formula: $1.027(M/10)(A_u/A_s)$, in which M is the mass in mg of atropine sulfate RS in the *reference solution* and A_u and A_s are the absorbances for the *solutions examined* and the *reference solution*, respectively.

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