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

Ethambutol Oral Solution

General Notices

NOTE: This monograph has been developed to cover unlicensed formulations.

Action and use

Antituberculosis drug.

DEFINITION

Ethambutol Oral Solution is a solution of Ethambutol Hydrochloride in a suitable flavoured aqueous vehicle.

The oral solution complies with the requirements stated under Oral Liquids and with the following requirements. Where appropriate, the oral solution also complies with the requirements stated under Unlicensed Medicines.

Content of ethambutol hydrochloride, $C_{10}H_{24}N_2O_2,2HCl$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

A. In the Assay, the retention time of the principal peak in the chromatogram obtained with solution (1) is similar to that of the principal peak in the chromatogram obtained with solution (2).
B. To 10 mL of the oral solution add 2 mL of a 1% w/v solution of *copper(II) sulfate* followed by 1 mL of 1M *sodium hydroxide*; a blue colour is produced.

TESTS

2-Aminobutan-1-ol

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

(1) Dilute a quantity of the oral solution containing 0.5 g of Ethambutol Hydrochloride to 10 mL with *methanol*.
(2) 0.05% w/v of *2-aminobutan-1-ol* in *methanol*.
(3) Equal volumes of solutions (1) and (2).

CHROMATOGRAPHIC CONDITIONS

(a) Use as the coating *silica gel G*.
(b) Use the mobile phase as described below.
(c) Apply 2 µL of each solution.
(d) Develop the plate to 15 cm.
(e) After removal of the plate, allow it to dry in air, heat at 110° for 10 minutes and cool; spray with *ninhydrin solution R1* and heat at 110° for 5 minutes.

MOBILE PHASE

10 volumes of 13.5M *ammonia*, 15 volumes of *water* and 75 volumes of *methanol*.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (3) shows two clearly separated spots.

LIMITS

In the chromatogram obtained with solution (1):

any spot corresponding to 2-aminobutan-1-ol is not more intense that the spot in the chromatogram obtained with solution (2) (1%).

ASSAY

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

(1) Dilute a weighed quantity of the oral solution containing 80 mg of Ethambutol Hydrochloride with sufficient of a mixture of 10 volumes of *acetonitrile R1* and 90 volumes of *water* to produce 100 mL.
(2) 0.08% w/v of *ethambutol hydrochloride BPCRS* in a mixture of 10 volumes of *acetonitrile* and 90 volumes of *water*

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (12.5 cm × 4.6 mm) packed *with octadecylsilyl silica gel for chromatography* (5 µm) (ACE Excel Super C18 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 a column temperature of 40°.
(e) Use a detection wavelength of 210 nm.
(f) Inject 10 µL of each solution.

When the chromatograms are recorded under the prescribed conditions, the retention time of ethambutol is about 2.3 minutes.

MOBILE PHASE

10 volumes of *acetonitrile R1* and 90 volumes of a 0.21% w/v solution of *potassium dihydrogen orthophosphate* containing 0.1% w/v of *triethylamine*.

DETERMINATION OF CONTENT

Determine the *weight per mL* of the oral solution, Appendix V G, and calculate the content of $C_{10}H_{24}N_2O_2$,2HCl, weight in volume, using the declared content of $C_{10}H_{24}N_2O_2$,2HCl in *ethambutol hydrochloride BPCRS*.

IMPURITIES

The impurity limited by the requirements of this monograph is: 2-aminobutan-1-ol.