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

Co-careldopa Tablets

General Notices

Levodopa and Carbidopa Tablets

Action and use

Dopa decarboxylase inhibitor + dopamine precursor; treatment of Parkinson's disease.

DEFINITION

Co-careldopa Tablets contain Carbidopa and Levodopa.

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

Content of anhydrous carbidopa, $C_{10}H_{14}N_2O_4$

90.0 to 110.0% of the stated amount.

Content of levodopa, $C_9H_{11}NO_4$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

A. In the Assay, the chromatogram obtained with solution (1) exhibits two peaks with the same retention times as those due to carbidopa and levodopa in the chromatogram obtained with solution (2).
B. To a quantity of the powdered tablets containing the equivalent of 1 mg of anhydrous carbidopa add 5 mL of 0.05M *sulfuric acid*, shake for 2 minutes and filter. Add 5 mL of *dimethylaminobenzaldehyde reagent* to the filtrate. A yellow colour is produced.
C. To a quantity of the powdered tablets containing 50 mg of Levodopa add 4 mL of *ethanol (96%)* and 1 mL of 1M *sulfuric acid* and shake for 2 minutes. Add 2 mL of *cinnamaldehyde*, allow to stand for 20 minutes, add 50 mL of 0.1M *hydrochloric acid*, shake for 2 minutes and allow to stand. Filter the aqueous layer obtained and to 5 mL add 0.1 mL of *iron(III) chloride solution R1*. To half of the solution add an excess of 5M *ammonia*; a purple colour is produced. To the remainder add an excess of 2M *sodium hydroxide*; a deep red colour is produced.

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 50 revolutions per minute.
(b) Use 750 mL of *0.1M hydrochloric acid*, at a temperature of 37°, as the medium.

PROCEDURE

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

(1) After 45 minutes withdraw a sample of the medium and filter. Use the filtered medium, diluted with *0.1M hydrochloric acid* if necessary, expected to contain 0.005% of Levodopa and 0.00054% w/v of Carbidopa.
(2) 0.0050% w/v of *levodopa BPCRS* and 0.00054% w/v of *carbidopa BPCRS* in 0.1M *hydrochloric acid*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (20 cm × 4 mm) packed with *octylsilyl silica gel for chromatography* (10 µm) (Lichrosorb RP8 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1.5 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 282 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

0.1M *potassium dihydrogen orthophosphate* adjusted to pH 3.0 with 1M *orthophosphoric acid*.

DETERMINATION OF CONTENT

Calculate the total content of $C_{10}H_{14}N_2O_4$ and of $C_9H_{11}NO_4$, in the medium using the declared contents of $C_{10}H_{14}N_2O_4$ in *carbidopa BPCRS* and of $C_9H_{11}NO_4$ in *levodopa BPCRS*.

ASSAY

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

(1) Shake a quantity of the powder containing 0.25 g of Levodopa with 60 mL of 0.1M *hydrochloric acid* for 15 minutes, add sufficient 0.1M *hydrochloric acid* to produce 100 mL and filter. Dilute 10 mL of the clear filtrate to 50 mL with 0.1M *hydrochloric acid*.
(2) 0.050% w/v of *levodopa BPCRS and* 0.0054% w/v of *carbidopa BPCRS* in 0.1M *hydrochloric acid*.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions described under Dissolution may be used.

DETERMINATION OF CONTENT

Calculate the content of $C_{10}H_{14}N_2O_4$ and of $C_9H_{11}NO_4$ in the tablets using the declared contents of $C_{10}H_{14}N_2O_4$ in *carbidopa BPCRS* and of $C_9H_{11}NO_4$ in *levodopa BPCRS*.

LABELLING

The quantity of Carbidopa is stated in terms of the equivalent amount of anhydrous carbidopa.