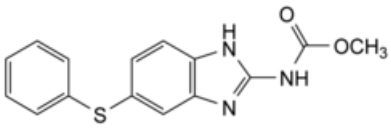
Edition: BP 2025 (Ph. Eur. 11.6 update)

Fenbendazole

General Notices

(Fenbendazole for Veterinary Use, Ph. Eur. monograph 1208)



$C_{15}H_{13}N_3O_2S$ 299.3 *43210-67-9*

Action and use

Antihelminthic.

Preparations

Fenbendazole Granules

Fenbendazole Veterinary Oral Paste

Fenbendazole Veterinary Oral Suspension

Ph Eur

DEFINITION

Methyl [5-(phenylsulfanyl)-1*H*-benzimidazol-2-yl]carbamate.

Content

98.0 per cent to 101.0 per cent (dried substance).

CHARACTERS

Appearance

White or almost white powder.

Solubility

Practically insoluble in water, sparingly soluble in dimethylformamide, very slightly soluble in methanol, practically insoluble in heptane.

IDENTIFICATION

Infrared absorption spectrophotometry (2.2.24).

Comparison fenbendazole CRS.

TESTS

Related substances

Liquid chromatography (2.2.29). *Prepare the solutions immediately before use.*

Test solution Dissolve 50.0 mg of the substance to be examined in hydrochloric methanol R and dilute to 10.0 mL with the same solvent.

Reference solution (a) Dilute 1.0 mL of the test solution to 50.0 mL with hydrochloric methanol R. Dilute 1.0 mL of this solution to 10.0 mL with hydrochloric methanol R.

Reference solution (b) Dissolve 5 mg of fenbendazole impurity A CRS, 5 mg of fenbendazole impurity B CRS and 5 mg of mebendazole CRS in hydrochloric methanol R and dilute to 50 mL with hydrochloric methanol R. Dilute 1 mL of the solution to 10 mL with hydrochloric methanol R.

Column:

— *size*: *l* = 0.10 m, Ø = 2.1 mm;

— *stationary phase*: end-capped ethylene-bridged octylsilyl silica gel for chromatography (hybrid material) R (1.7 µm);

— *temperature*: 30 °C.

Mobile phase:

— *mobile phase A*: glacial acetic acid R, methanol R, water for chromatography R (1:30:70 *V/V/V*);

— *mobile phase B*: glacial acetic acid R, water for chromatography R, acetonitrile R (1:30:70 *V/V/V*);

Time (min)	Mobile phase A (per cent *V/V*)	Mobile phase B (per cent *V/V*)
0 - 2	100	0
2 - 5	100 → 50	0 → 50
5 - 26	50	50

Flow rate 0.3 mL/min.

Detection Spectrophotometer at 280 nm.

Injection 1 µL.

Identification of impurities Use the chromatogram obtained with reference solution (b) to identify the peaks due to impurities A and B and mebendazole.

Relative retention With reference to fenbendazole (retention time = about 8 min): impurity A = about 0.2; impurity B = about 0.6; mebendazole = about 0.8.

System suitability Reference solution (b):

— resolution: minimum 13.0 between the peaks due to impurity B and mebendazole.

Calculation of percentage contents:

— *correction factor*: for the calculation of content, multiply the peak area of impurity A by 0.4;

— for each impurity, use the concentration of fenbendazole in reference solution (a).

Limits:

— *impurity B*: maximum 0.5 per cent;

— *impurity A*: maximum 0.2 per cent;

— *unspecified impurities*: for each impurity, maximum 0.20 per cent;

— *total*: maximum 1.0 per cent;

— *reporting threshold*: 0.10 per cent.

Loss on drying (*2.2.32*)

Maximum 1.0 per cent, determined on 1.000 g by drying in an oven at 105 °C for 3 h.

Sulfated ash (*2.4.14*)

Maximum 0.3 per cent, determined on 1.0 g.

ASSAY

Dissolve 0.200 g in 30 mL of *anhydrous acetic acid R*, warming gently if necessary. Cool and titrate with *0.1 M perchloric acid*, determining the end-point potentiometrically (*2.2.20*).

1 mL of *0.1 M perchloric acid* is equivalent to 29.93 mg of $C_{15}H_{13}N_3O_2S$.

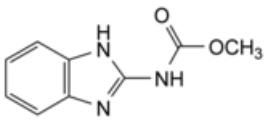
STORAGE

Protected from light.

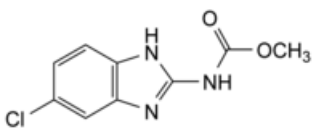
IMPURITIES

Specified impurities *A, B*.

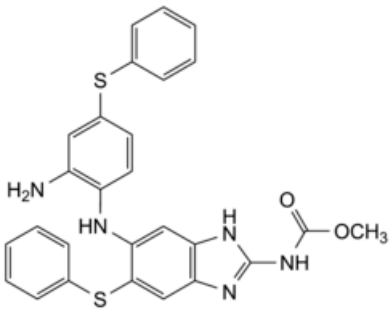
Other detectable impurities (the following substances would, if present at a sufficient level, be detected by one or other of the tests in the monograph. They are limited by the general acceptance criterion for other/unspecified impurities and/or by the general monograph Substances for pharmaceutical use (2034). It is therefore not necessary to identify these impurities for demonstration of compliance. See also 5.10. Control of impurities in substances for pharmaceutical use) *C*.



A. methyl (1*H*-benzimidazol-2-yl)carbamate,



B. methyl (5-chloro-1*H*-benzimidazol-2-yl)carbamate,



C. methyl [5^{2}-amino-3^{1}*H*-2,6-dithia-4-aza-3(5,6)-[1,3]benzimidazola-1,7(1),5(1,4)-tribenzenaheptaphan-3^{2}-yl]carbamate.

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