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

Nabumetone Tablets

General Notices

Action and use

Cyclo-oxygenase inhibitor; analgesic; anti-inflammatory.

DEFINITION

Nabumetone Tablets contain Nabumetone.

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

Content of nabumetone, $C_{15}H_{16}O_2$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

The *infrared absorption spectrum* of the powdered tablets, Appendix II A, is concordant with the *reference spectrum* of nabumetone *(RS 239)*.

TESTS

Related substances

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

(1) Shake a quantity of the powdered tablets containing 0.25 g of Nabumetone with 50 mL of *acetonitrile*, filter through a glass-fibre filter (Whatman GF/C is suitable) and use the filtrate.
(2) Dilute 1 volume of solution (1) to 200 volumes.
(3) 0.0015% w/v of *nabumetone impurity F EPCRS*.
(4) 0.002% w/v of each of *nabumetone BPCRS* and *nabumetone impurity D BPCRS*.
(5) Dilute 1 volume of solution (2) to 10 volumes.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (15 cm × 4.6 mm) packed with *base-deactivated octadecylsilyl silica gel for chromatography* (4 µm) (Genesis C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use a column temperature of 40°.
(e) Use a detection wavelength of 254 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

Mobile phase A 12 volumes of *tetrahydrofuran*, 28 volumes of *acetonitrile* and 60 volumes of a 0.1% v/v solution of *glacial acetic acid* in *carbon dioxide-free water*.

Mobile phase B 24 volumes of *tetrahydrofuran*, 56 volumes of *acetonitrile* and 20 volumes of a 0.1% v/v solution of *glacial acetic acid* in *carbon dioxide-free water*.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-12	100	0	isocratic
12-28	100→0	0→100	linear gradient
28-33	0	100	isocratic
33-34	0→100	100→0	linear gradient
34-35	100	0	re-equilibration

When the chromatograms are recorded under the prescribed conditions, the relative retentions with reference to nabumetone (retention time about 11 minutes) are: impurity D, about 1.1 and impurity F, about 2.7.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (4), the *resolution* between the two principal peaks is at least 1.5.

LIMITS

In the chromatogram obtained with solution (1):

the area of any peak corresponding to impurity F is not greater than the area of the principal peak in the chromatogram obtained with solution (3) (0.3%);

the area of any other *secondary peak* is not greater than 0.4 times the area of the principal peak in the chromatogram obtained with solution (2) (0.2%);

the sum of the areas of any other *secondary peaks* is not greater than the area of the principal peak in the chromatogram obtained with solution (2) (0.5%).

Disregard any peak with an area less than the area of the principal peak in the chromatogram obtained with solution (5) (0.05%).

ASSAY

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

(1) To a quantity of powdered tablets containing 0.5 g of Nabumetone, add 400 mL of *acetonitrile*, mix with the aid of ultrasound, allow to cool, add sufficient *acetonitrile* to produce 500 mL, mix and filter through a glass-fibre filter (Whatman GF/C is suitable). Dilute 1 volume of the filtrate to 20 volumes with the mobile phase.
(2) Dilute 1 volume of a 0.1% w/v solution of *nabumetone BPCRS* in *acetonitrile* to 20 volumes with the mobile phase.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (15 cm × 4.6 mm) packed with *base-deactivated octadecylsilyl silica gel for chromatography* (4 µm) (Genesis C18 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 254 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

18 volumes of *tetrahydrofuran*, 40 volumes of a 0.1% v/v solution of *glacial acetic acid* in *carbon dioxide-free water* and 42 volumes of *acetonitrile*.

When the chromatograms are recorded under the prescribed conditions the retention time of nabumetone is about 4 minutes.

DETERMINATION OF CONTENT

Calculate the content of nabumetone, $C_{15}H_{16}O_2$, in the tablets from the chromatograms obtained and using the declared content of $C_{15}H_{16}O_2$ in *nabumetone BPCRS*.

IMPURITIES

The impurities limited by the requirements of this monograph include those listed under Nabumetone.