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Ranitidine Effervescent Tablets

General Notices

Effervescent Ranitidine Tablets

Action and use

Histamine H_2 receptor antagonist; treatment of peptic ulcer disease.

DEFINITION

Ranitidine Effervescent Tablets contain Ranitidine Hydrochloride in a suitable effervescent basis.

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

Content of ranitidine, $C_{13}H_{22}N_4O_3S$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

A. The *light absorption*, Appendix II B, in the range 200 to 400 nm of the solution prepared by dissolving one tablet in 100 mL of *water* exhibits a maximum at 313 nm. Dilute the solution if necessary.
B. In the Assay, the retention time of the principal peak in the chromatogram obtained with solution (1) is the same as that of the principal peak in the chromatogram obtained with solution (2).
C. Dissolves with vigorous effervescence on the addition of warm *water* to produce a clear solution.

TESTS

Disintegration

Comply with the requirement for Effervescent Tablets stated under Tablets.

Related substances

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

(1) Shake a quantity of powdered tablets containing the equivalent of 0.13 g of Ranitidine with 100 mL *methanol (10%)* and filter (Whatman No. 42. paper is suitable).
(2) Dilute 1 volume of solution (1) to 500 volumes with *methanol (10%)*.
(3) 0.0065% w/v of *ranitidine for impurity A identification EPCRS* in mobile phase A.
(4) Dissolve the contents of a vial of *ranitidine impurity J EPCRS* in 1 mL of solution (1).
(5) Dilute 1 volume of solution (2) to 2 volumes with *methanol (10%)*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (10 cm × 4.6 mm) packed with *octadecylsilyl amorphous organosilica polymer* (3.5 µm) (Waters Xterra MS C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1.5 mL per minute.
(d) Use a column temperature of 35°.
(e) Use a detection wavelength of 230 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

Buffer solution Adjust the pH of 950 mL of 0.05M *potassium dihydrogen orthophosphate* to 7.1 by adding *strong sodium hydroxide solution* and dilute to 1 litre.

Mobile phase A 2 volumes of *acetonitrile* and 98 volumes of the buffer solution.

Mobile phase B 22 volumes of *acetonitrile* and 78 volumes of the buffer solution.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-10	100→0	0→100	linear gradient
10-15	0	100	isocratic
15-16	0→100	100→0	linear gradient
16-20	100	0	isocratic

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

Identify any peak due to impurity A in the chromatogram obtained with solution (1), using the chromatogram obtained with solution (3).

In the chromatogram obtained with solution (1):

the area of any *secondary peak* with a retention time relative to ranitidine of 0.66 is not greater than 2.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.5%);

the area of any peak corresponding to impurity A is not greater than 2.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.5%);

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

the total area of any such peaks is not greater than 5 times the area of the principal peak in the chromatogram obtained with solution (2) (1.0%).

Disregard any peak with an area less than that of the principal peak in the chromatogram obtained with solution (5) (0.1%).

ASSAY

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

(1) Shake 10 tablets with 400 mL of *methanol (10%)* until the tablets have completely disintegrated, dilute to 500 mL with *methanol (10%)*, filter (Whatman GF/C paper is suitable) and dilute the filtrate with the mobile phase to produce a solution containing the equivalent of 0.01% w/v of ranitidine.
(2) 0.0112% w/v of *ranitidine hydrochloride BPCRS* in *methanol (10%)*.
(3) 0.0112% w/v of *ranitidine hydrochloride BPCRS* and 0.0002% w/v of *dimethyl{5-[2-(1-methylamino-2-nitrovinylamino)ethylsulfinylmethyl]furfuryl}amine BPCRS* in *methanol (10%)*

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *octadecylsilyl silica gel for chromatography* (10 µm) (Partisil ODS 1 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 2 mL per minute.
(d) Use ambient column temperature.
(e) Use a detection wavelength of 322 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

15 volumes of 0.1M *ammonium acetate* and 85 volumes of *methanol*.

SYSTEM SUITABILITY

The assay is not valid unless the peak due to ranitidine in the chromatogram obtained with solution (3) shows baseline separation from the peak due to dimethyl{5-[2-(1-methylamino-2-nitrovinylamino)ethylsulfinylmethyl]-furfuryl}amine.

DETERMINATION OF CONTENT

Calculate the content of $C_{13}H_{22}N_4O_3S$ in the tablets using the declared content of $C_{13}H_{22}N_4O_3S$ in *ranitidine hydrochloride BPCRS*.

STORAGE

Ranitidine Effervescent Tablets should be protected from light.

LABELLING

The quantity of active ingredient is stated in terms of the equivalent amount of ranitidine.

IMPURITIES

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