Status: Currently Official on 14-Feb-2025
Official Date: Official as of 01-Dec-2015
Document Type: USP Monographs
DocId: GUID-3FA7622F-BDE4-4F36-85B6-F0B5ACC05D43_1_en-US
DOI: https://doi.org/10.31003/USPNF_M18365_01_01
DOI Ref: 5uns2

© 2025 USPC
Do not distribute

Clofazimine Capsules

DEFINITION
Clofazimine Capsules contain NLT 90.0% and NMT 110.0% of the labeled amount of clofazimine ($C_{27}H_{22}Cl_2N_4$).

IDENTIFICATION
- **A.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.
- **B.** The UV spectrum of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.

ASSAY
- **Procedure**

Buffer: 4.5 mg/mL of sodium dodecyl sulfate, 1.7 mg/mL of tetrabutylammonium hydrogen sulfate, and 1.8 mg/mL of disodium hydrogen phosphate in water. Adjust with dilute phosphoric acid (about 8.5%) to a pH of 3.0 in 90% of the volume before diluting with water to volume.

Mobile phase: Acetonitrile and *Buffer* (65:35)

System suitability solution: 0.5 mg/mL of USP Clofazimine RS and 1.5 µg/mL of USP Clofazimine Related Compound B RS in *Mobile phase*

Standard solution: 0.05 mg/mL of USP Clofazimine RS in *Mobile phase*

Sample stock solution: Nominally 0.5 mg/mL of clofazimine in *Mobile phase* prepared as follows. Remove as completely as possible the contents of NLT 20 Capsules, and mix. Transfer the weighed portion of the combined contents of the Capsules, equivalent to about 500 mg of clofazimine, into a 250-mL conical flask. Add 50 mL of *Mobile phase* in increments, shake well, and quantitatively transfer into a 1000-mL volumetric flask. Repeat this process until transfer of all the Capsule contents is complete and make up the volume of the flask with *Mobile phase*. Stir at a high speed to make the solution homogenous.

Sample solution: Nominally 0.05 mg/mL of clofazimine from the *Sample stock solution* in *Mobile phase* prepared as follows. Filter 20 mL of the *Sample stock solution* into a beaker. Transfer 1.0 mL of the filtered solution into a 10-mL volumetric flask, and dilute to volume with *Mobile phase*.

Chromatographic system
(See *Chromatography (621), System Suitability*.)

Mode: LC

Detector: UV 280 nm. For *Identification* test *B*, use a diode array detector in the range of 190 nm–400 nm.

Column: 4.6-mm × 25-cm; 5-µm packing L7

Flow rate: 1.0 mL/min

Injection volume: 20 µL

System suitability

Samples: *System suitability solution* and *Standard solution*

Suitability requirements

Resolution: NLT 2.0 between clofazimine and clofazimine related compound B peaks, *System suitability solution*

Tailing factor: NMT 1.5 for the clofazimine peak, *Standard solution*

Relative standard deviation: NMT 1.0% for the clofazimine peak, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of clofazimine ($C_{27}H_{22}Cl_2N_4$) in the portion of Capsules taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of clofazimine from the *Sample solution*

r_S = peak response of clofazimine from the *Standard solution*

OFFICIAL

https://trungtamthuoc.com/

C_S = concentration of USP Clofazimine RS in the *Standard solution* (mg/mL)

C_U = nominal concentration of clofazimine in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–110.0%

PERFORMANCE TESTS

• **Dissolution ⟨711⟩**

Medium: Water; 500 mL

Apparatus 2: 50 rpm

Time: 15 min

Analysis: Place 1 Capsule in each vessel, and allow the Capsule to sink to the bottom of the vessel before starting the rotation of the blade. Observe the Capsules, and record the time taken for each Capsule shell to rupture.

Tolerances: The requirements are met if all of the Capsules tested rupture in NMT 15 min. If 1 or 2 of the Capsules rupture in more than 15 but NMT 30 min, repeat the test on 12 additional Capsules. NMT 2 of the total of 18 Capsules tested rupture in more than 15 min but NMT 30 min.

• **Uniformity of Dosage Units ⟨905⟩:** Meet the requirements

IMPURITIES

• **Organic Impurities**

Buffer, Mobile phase, System suitability solution, and **Chromatographic system:** Proceed as directed in the *Assay*.

Standard solution: 0.5 µg/mL of USP Clofazimine RS and 5 µg/mL of USP Clofazimine Related Compound B RS in *Mobile phase*

Sample solution: Nominally 0.5 mg/mL of clofazimine in *Mobile phase* prepared as follows. Remove as completely as possible the contents of NLT 20 Capsules, and mix. Transfer the weighed portion of the combined contents of the Capsules, equivalent to about 500 mg of clofazimine, into a 250-mL conical flask. Add 50 mL of *Mobile phase* in increments, shake well, and quantitatively transfer into a 1000-mL volumetric flask. Repeat this process until transfer of all the Capsule contents is complete and make up the flask volume with *Mobile phase*. Stir at a high speed to make the solution homogenous and filter.

Suitability requirements

Resolution: NLT 2.0 between the clofazimine and clofazimine related compound B peaks, *System suitability solution*

Relative standard deviation: NMT 2.8% for the clofazimine peak, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of clofazimine related compound B in the portion of Capsules taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of clofazimine related compound B from the *Sample solution*

r_S = peak response of clofazimine related compound B from the *Standard solution*

C_S = concentration of USP Clofazimine Related Compound B RS in the *Standard solution* (mg/mL)

C_U = nominal concentration of clofazimine in the *Sample solution* (mg/mL)

Calculate the percentage of unspecified impurities in the portion of Capsules taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of impurities from the *Sample solution*

r_S = peak response of clofazimine from the *Standard solution*

C_S = concentration of USP Clofazimine RS in the *Standard solution* (mg/mL)

C_U = nominal concentration of clofazimine in the *Sample solution* (mg/mL)

Acceptance criteria: See *Table 1*. Disregard any impurity peaks less than 0.05%.

Table 1

OFFICIAL

https://trungtamthuoc.com/

Name	Relative Retention Time	Acceptance Criteria, NMT (%)
Clofazimine related compound B	0.81	1.0
Clofazimine	1.00	—
Any individual unspecified impurity	—	0.10
Total impurities	—	2.0

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in well-closed containers.
- **USP Reference Standards** ⟨11⟩

USP Clofazimine RS

USP Clofazimine Related Compound B RS

5-(4-Chlorophenyl)-3-(isopropylimino)-*N*-phenyl-3,5-dihydrophenazin-2-amine.

$C_{27}H_{23}ClN_4$ 438.95

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
CLOFAZIMINE CAPSULES	Documentary Standards Support	SM12020 Small Molecules 1

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 40(5)

Current DocID: GUID-3FA7622F-BDE4-4F36-85B6-F0B5ACC05D43_1_en-US

DOI: https://doi.org/10.31003/USPNF_M18365_01_01

DOI ref: 5uns2

OFFICIAL