Desloratadine Orally Disintegrating Tablets

Type of Posting       Revision Bulletin
Posting Date         30–Nov–2018
Official Date        01–Dec–2018
Expert Committee     Chemical Medicines Monographs 5
Reason for Revision   Compliance

In accordance with the Rules and Procedures of the 2015–2020 Council of Experts, the Chemical Medicines Monographs 5 Expert Committee has revised the Desloratadine Orally Disintegrating Tablets monograph.

The purpose of this revision is to widen the limit for any other individual unspecified degradation product in Table 2 from NMT 0.20% to NMT 0.2% to accommodate the sponsor’s FDA-approved specification.

The Desloratadine Orally Disintegrating Tablets Revision Bulletin supersedes the currently official monograph.

Should you have any questions, please contact Mary Koleck, Ph.D., Senior Scientific Liaison (301-230-7420 or mpk@usp.org).
Desloratadine Orally Disintegrating Tablets

DEFINITION
Desloratadine Orally Disintegrating Tablets contain NLT 95.0% and NMT 105.0% of the labeled amount of desloratadine (C۱۹H۲۲ClN۲).

IDENTIFICATION
• A. ULTRAVIOLET ABSORPTION (197U)
  Standard solution and Sample solution: Proceed as directed in the Assay.
  Instrumental conditions
    Mode: UV
    Wavelength range: 230–330 nm
    [Note—Alternatively, a diode array detector may be used in the Assay to obtain the spectra.]
  Acceptance criteria: The UV spectrum of the Sample solution corresponds to that of the Standard solution.
• B. The retention time of the major peak of the Sample solution corresponds to that of the Standard solution, as obtained in the Assay.

ASSAY
• PROCEDURE
  Buffer: 6.8 g/L of monobasic potassium phosphate. Adjust with phosphoric acid to a pH of 3.0.
  Mobile phase: Acetonitrile, methanol, and Buffer (28:7:65)
  Diluent: Methanol and 0.1 N hydrochloric acid (40:60)
  Standard solution: 0.05 mg/mL of USP Desloratadine RS in Diluent. Sonication may be used to aid dissolution.
  Sample stock solution: Nominally 0.25 mg/mL of desloratadine, prepared as follows. Transfer 10 Tablets to a suitable volumetric flask, add water to 15% of the flask volume, and shake until the Tablets disintegrate completely. Add 75% of the flask volume of Diluent and sonicate for 30 min with intermittent shaking, and dilute with Diluent to volume. Centrifuge a portion of this solution. Use the supernatant.
  Sample solution: Nominally 0.05 mg/mL of desloratadine from the Sample stock solution in Diluent; centrifugate
  Chromatographic system
    (See Chromatography (621), System Suitability.)
    Mode: LC
    Detector: UV 258 nm
    Column: 4.6-mm × 25-cm; 5-µm packing L1
    Flow rate: 1 mL/min
    Injection volume: 40 µL
  System suitability
    Sample: Standard solution
    Suitability requirements
      Tailing factor: NMT 2.0
      Relative standard deviation: NMT 2.0%
  Analysis
    Samples: Standard solution and Sample solution
    Calculate the percentage of the labeled amount of desloratadine (C۱۹H۲۲ClN۲) dissolved:
    Result = \( \frac{r_u}{r_s} \times \frac{C_s}{C_u} \times (1/L) \times 100 \)

    \( r_u \) = peak response from the Sample solution
    \( r_s \) = peak response from the Standard solution
    \( C_s \) = concentration of USP Desloratadine RS in the Standard solution (mg/mL)
    \( V \) = volume of Medium, 900 mL
    \( L \) = label claim (mg/Tablet)

    Tolerances: NLT 80% (Q) of the labeled amount of desloratadine (C۱۹H۲۲ClN۲) is dissolved.
• UNIFORMITY OF DOSAGE UNITS (905): Meet the requirements

IMPURITIES
• ORGANIC IMPURITIES
  Buffer: Add 10 mL/L of triethylamine to a 1.36 g/L solution of monobasic potassium phosphate. Adjust with phosphoric acid to a pH of 2.5.
  Solution A: Methanol, acetonitrile, and Buffer (15:5:80)
  Solution B: Acetonitrile, tetrahydrofuran, and Buffer (70:5:30)
  Solution C: Dilute 8.5 mL of hydrochloric acid with methanol to 1 L.
  Mobile phase: See Table 1.

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Solution A (%)</th>
<th>Solution B (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

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Analysis

Diluent: Solution C and Buffer (30:70)

System suitability stock solution: 0.05 mg/mL each of USP Desloratadine Related Compound A RS and USP Desloratadine Related Compound F RS in methanol.

System suitability solution: 0.5 mg/mL of USP Desloratadine RS, 1.0 µg/mL each of USP Desloratadine Related Compound A RS and USP Desloratadine Related Compound F RS, prepared as follows. Transfer 50 mg of USP Desloratadine RS into a 100-mL volumetric flask, add 70 mL of Diluent, and sonicate to dissolve. Add 2 mL of the System suitability stock solution and dilute with Diluent to volume.

Standard solution: 0.0025 mg/mL of USP Desloratadine 0.5 mg/mL of USP Desloratadine Related Compound A RS and USP Desloratadine Related Compound F RS in Diluent

Sample solution: Nominally 0.5 mg/mL of desloratadine from NLT 40 Tablets, prepared as follows. Transfer an amount of powder to a suitable volumetric flask to obtain the nominal concentration of desloratadine. Add 70% of the flask volume of Diluent and sonicate for 20 min with intermittent shaking. Dilute with Diluent to volume. Centrifuge a portion of the solution and use the supernatant.

Chromatographic system

(See Chromatography (621), System Suitability.)

Mode: LC

Detector: UV 280 nm

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

Column temperature: 30°C

Flow rate: 1 mL/min

Injection volume: 40 µL

System suitability

Samples: System suitability solution and Standard solution

Suitability requirements

Resolution: NLT 2.0 between desloratadine and desloratadine related compound A, System suitability solution

Tailing factor: NMT 2.0 for desloratadine and desloratadine related compound F, Standard solution

Relative standard deviation: NMT 10.0% desloratadine related compound F, Standard solution

Signal-to-noise ratio: NLT 10 for desloratadine peak, Standard solution

Analysis

Samples: Standard solution and Sample solution

Identify the impurities using the relative retention times given in Table 2.

Calculate the percentage of desloratadine related compound F in the portion of Tablets taken:

\[
\text{Result} = \left( \frac{r_s}{r_f} \right) \times \left( \frac{C_f}{C_s} \right) \times 100
\]

\[r_s\] = peak response of desloratadine related compound F from the Standard solution

\[r_f\] = peak response of any unspecified degradation product from the Sample solution

\[C_f\] = concentration of USP Desloratadine Related Compound F RS in the Standard solution (µg/mL)

\[C_s\] = nominal concentration of desloratadine in the Sample solution (µg/mL)

Acceptance criteria: See Table 2.

### Table 2

<table>
<thead>
<tr>
<th>Compound</th>
<th>Relative Retention Time</th>
<th>Acceptance Criteria, NMT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dechloro desloratadine[a]</td>
<td>0.42</td>
<td>—</td>
</tr>
<tr>
<td>Desloratadine</td>
<td>1.00</td>
<td>—</td>
</tr>
<tr>
<td>Desloratadine related compound A[b]</td>
<td>1.09</td>
<td>—</td>
</tr>
<tr>
<td>Dehydro desloratadine[c]</td>
<td>1.33</td>
<td>0.2</td>
</tr>
<tr>
<td>Desloratadine related compound F</td>
<td>1.37</td>
<td>—</td>
</tr>
<tr>
<td>Loratadine[d]</td>
<td>1.89</td>
<td>—</td>
</tr>
<tr>
<td>Any other individual unspecified degradation product</td>
<td>—</td>
<td>0.2[a] (08-Dec-2019)</td>
</tr>
</tbody>
</table>

Total degradation products | — | 0.5 |

[b] This is a process impurity and is included in the table for identification only. This impurity is controlled in the drug substance. It is not to be reported for the drug product and should not be included in the total impurities.

### ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight containers. Store at controlled room temperature.
- **USP Reference Standards (11):**
  - USP Desloratadine RS
  - USP Desloratadine Related Compound A RS
  - USP Desloratadine Related Compound F RS

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