FORMULATION RECORD

Name: Papaverine and Phentolamine Injection
Strength: 30 mg/ml papaverine, 1 mg/ml phentolamine
Dosage Form: Solution
Route of Administration: Injection

Date of Last Review or Revision: Today
Person Completing Last Review or Revision: RPS

Formula:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
<th>Physical Description</th>
<th>Solubility</th>
<th>Therapeutic Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papaverine hydrochloride</td>
<td>300 mg</td>
<td>white crystalline</td>
<td>1 g/40 ml water; soluble in alcohol</td>
<td>vasodilator</td>
</tr>
<tr>
<td>NaCl</td>
<td>15 mg</td>
<td>white granules</td>
<td>1 g/2.8 ml water; very slightly soluble in alcohol</td>
<td>topical antiinflammatory; osmotic agent</td>
</tr>
<tr>
<td>EDTA 0.1%</td>
<td>0.5 ml</td>
<td>clear, non-viscous solution</td>
<td>soluble in water</td>
<td>chelating agent</td>
</tr>
<tr>
<td>Phentolamine mesylate</td>
<td>10 mg</td>
<td>white crystals</td>
<td>1 g/50 ml water</td>
<td>active ingredient</td>
</tr>
<tr>
<td>Sodium metabisulfite</td>
<td>10 mg</td>
<td>white granules</td>
<td>freely soluble in water</td>
<td>antioxidant</td>
</tr>
<tr>
<td>Mannitol</td>
<td>50 mg</td>
<td>white granules</td>
<td>1 g/5.5 ml water; 1 g/83 ml alcohol</td>
<td>osmotic agent</td>
</tr>
<tr>
<td>Purified Water</td>
<td>qs 10 ml</td>
<td>clear, non-viscous liquid</td>
<td>NA</td>
<td>solvent</td>
</tr>
</tbody>
</table>

Calculations:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
<th>Quantity for 18 ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papaverine hydrochloride</td>
<td>300 mg</td>
<td>540 mg</td>
</tr>
<tr>
<td>NaCl</td>
<td>15 mg</td>
<td>27 mg</td>
</tr>
<tr>
<td>EDTA 0.1%</td>
<td>0.5 ml</td>
<td>0.9 ml</td>
</tr>
<tr>
<td>Phentolamine mesylate</td>
<td>10 mg</td>
<td>18 mg</td>
</tr>
<tr>
<td>Sodium metabisulfite</td>
<td>10 mg</td>
<td>18 mg</td>
</tr>
<tr>
<td>Mannitol</td>
<td>50 mg</td>
<td>90 mg</td>
</tr>
<tr>
<td>Purified Water</td>
<td>qs 10 ml</td>
<td>qs 18 ml</td>
</tr>
</tbody>
</table>

Equipment Required:

- Class A balance
- Small beaker and small stir bar
- 10 ml syringe with appropriate needles
- A sterilizing filter
- A sterile parenteral vial
- Venting needle
- A scintillation vial

Method of Preparation:
1. Calibrate a beaker **with the stir bar in it**.
2. Accuracy weigh the papaverine and add to the beaker. Rinse the weigh boat with about 5 ml of purified water.
3. Add the NaCl via an aqueous stock solution. Add the EDTA solution. Begin stirring the beaker's contents.
4. Add very low heat (i.e., not more than 40°C)
5. Add approximately 5 ml of purified water.
6. Accuracy weigh the phentolamine triturated and add to the beaker. Rinse the weigh boat with 1 – 2 ml of purified water.
7. Turn off the heat. Bring the solution to volume.
8. Using a needle attached to a 10 ml syringe, draw up the solution from the beaker.
9. Remove the needle, attach a sterilizing filter, and attach a new needle.
10. Dispense 10 ml into a vented parenteral vial.
11. Store the remaining solution in a scintillation vial.

**Description of Finished Product:**

Clear to slightly yellow non-viscous solution. No visible particles.

**Quality Control Procedures:**

Analysis of both the filtered and unfilter solutions

**Packaging Container:**

A sterile parenteral vial
A scintillation vial

**Storage Requirements:**

**Beyond-Use Date Assignment:**

USP Guidelines:
Aqueous solutions:
When prepared from ingredients in solid form, the beyond-use date should be not later than 14 days when stored at cold temperature.
Assign 14 days. Storage in cold temperature is not required.

**Label Information:**

**Source of Recipe:**

**Literature Information:**
