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Suggested Formula	Labetalol Hydrochloride 20 mg/mL for Intravenous Injection (Powder Blend for Reconstitution, 20 x 5 mL Vials)	FIN	F 007 736
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### SUGGESTED FORMULATION

Ingredient Listing	Qty.	Unit	NDC #	Supplier	Lot Number	Expiry Date
Labetalol Hydrochloride, USP	2.000	g				
Mannitol, USP	3.23	g				
Alcohol (95%), USP	15.0	mL				
Sterile Water for Injection, USP	80.0	mL				
Sterile Water for Injection, USP	q.s. to 100.0	mL				
Hydrochloride Acid 10% Solution	As needed					





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## SPECIAL PREPARATORY CONSIDERATIONS

### Ingredient-Specific Information

**Light Sensitive** (protect from light whenever possible):

*Labetalol Hydrochloride*

### Suggested Preparatory Guidelines

Non-Sterile Preparation     Sterile Preparation

Processing Error / Testing Considerations: To account for processing error sterility and endotoxin testing considerations during preparation, it is suggested to measure an additional **5 to 9%** of the required quantities of ingredients.

Special Instruction: This formula may contain one or more Active Pharmaceutical Ingredients (APIs) that may be classified as hazardous, please refer & verify the current NIOSH list of Antineoplastic and Other Hazardous Drugs in Healthcare Settings, 2016. **General Chapter <800> Hazardous Drugs – Handling in Healthcare Settings** was formally published February 1, 2016 in the First Supplement to USP 39-NF 34 and has a delayed **official implementation date of December 31<sup>st</sup>, 2019**.

This formula must be prepared within the appropriate facilities under adequate environmental conditions, following the necessary guidelines and procedures as stated within *USP 797* and *USP 800* when handling hazardous drugs. Only trained and qualified personnel must prepare this formula.

All heat stable, reusable materials and equipment must be sterilized and depyrogenated by dry heat sterilization at 250°C for 2 hours prior to use.

Every batch of final product compounded using this procedure must be sterility and endotoxin tested before being dispensed.

All required personal protective equipment (sterile and hazardous if applicable), such as but not limited to, gowns, aprons, sleeves, gloves both inner and outer if applicable, shoe covers, hairnet, head cap, beard cover, eyewear, appropriate face mask, respirator and face shield, etc., where applicable must be worn at all times. In addition, proper personnel cleansing must be done before entering the buffer or clean area.

If applicable, follow all required procedures for hazardous drug handling including but not limited to procurement, transport, storage, preparation, dispensing, administration, clean up (spills) & disposal.

Filter integrity must be validated by performing a filter stress test. If the test demonstrates that the filter might be defective, the solution must be discarded and remade.

If you are a registered 503B facility, please refer to all relevant guidance documents including but not limited to the Code of Federal Regulations (CFR), Guidance for Industry (GFI) and Compliance Policy Guides (CPGs).

This procedure requires the use of very small quantities of ingredients. All calculations and preparation techniques must be verified before dispensing the final product.



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**SUGGESTED PREPARATION (for 20 x 5 mL Vials)**

Weigh and / or measure the following ingredients when appropriate:

Ingredient Listing	Qty.	Unit	Multiplication factor (*): ____	Processing Error	Qty. to measure
Labetalol Hydrochloride, USP §	2.000	g			
Mannitol, USP §	3.23	g			
Alcohol (95%), USP §	15.0	mL			
Sterile Water for Injection, USP §	80.0	mL			
Sterile Water for Injection, USP §	q.s. to 100.0	mL			
Hydrochloride Acid 10% Solution §	As needed				

- \* Takes into account increased batch size conversions and density conversions, if required.
- § Weigh / measure just prior to use.

Preparatory Instruction

**IMPORTANT: All preparatory procedures must be performed using proper Aseptic Technique**

1.	<p><b><u>Equipment sterilization:</u></b></p> <p>Following the manufacturer's specifications, sterilize and depyrogenate all heat stable, reusable materials and equipment, then return to ambient temperature.</p>
2.	<p><b><u>Powder-liquid preparation:</u></b></p> <p>A. In the given order, sequentially add the following ingredients to the Sterile Water for Injection (80.0 mL <i>plus</i> processing error adjustments):</p> <ul style="list-style-type: none"> <li>-Alcohol (95%)</li> <li>-Mannitol</li> <li>-Labetalol Hydrochloride</li> </ul> <p><u>Specifications:</u> Continuously mix until all solid particles have completely dissolved.</p> <p><u>End result:</u> Homogeneous liquid-like solution.</p> <p><u>Note:</u> Add the next ingredient, once the previous one has been completely added and dissolved.</p>



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3.	<p><b><u>pH testing:</u></b></p> <p>A. Draw an appropriate amount of the mixture (Step 2A).</p> <p>B. Test the pH of the sample. It should lie between 3.0 and 4.0.</p> <p>C. <u>If the pH &gt; 4.0, carefully add in a dropwise manner the Hydrochloric Acid 10% Solution to the mixture:</u></p> <ol style="list-style-type: none"><li>1. Draw and transfer 1 or 2 drops of the Hydrochloric Acid 10% Solution to the mixture.</li><li>2. Stir for at least 5 minutes to evenly disperse the Hydrochloric Acid 10% Solution.</li><li>3. Re-test the pH.</li><li>4. Continue to add the Hydrochloric Acid 10% Solution until the pH of 3.0 to 4.0 is obtained.</li></ol> <p>IMPORTANT: Do not allow the pH to fall below 3.0.</p>
4.	<p><b><u>Filling to volume:</u></b></p> <p>A. Add additional Sterile Water for Injection to the above mixture to fill to the required batch size (100.0 mL <i>plus</i> processing error adjustments).</p> <p><u>Specification:</u> Continuously mix.</p> <p><u>End result:</u> Homogeneous liquid-like solution.</p>
5.	<p><b><u>Filtering and transferring:</u></b></p> <p>Aseptically filter the solution through a 0.22-<math>\mu</math>m sterile filter into the recommended dispensing container (see Packaging requirements). Transfer the remainder into a separate dispensing container. This is to be used as the Test sample for sterility and endotoxin testing.</p>
6.	<p><b><u>Filter integrity test:</u></b></p> <p>Validate filter integrity by performing a filter stress test. If the test demonstrates that the filter might be defective, the solution must be discarded and remade.</p>
7.	<p><b><u>Lyophilization:</u></b></p> <p>A. Freeze-dry the sterile liquid, and seal the unit dose vials, following the instructions indicated by the Lyophilizer manufacturer.</p> <p>B. Remove the samples from the machine and store appropriately.</p>
8.	<p><b><u>Sterility testing:</u></b></p> <p>Validate the Test sample for sterility and endotoxins, in accordance to current USP 797 regulatory guidelines.</p>



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**SUGGESTED PRESENTATION**

Estimated Beyond-Use Date	6 months, as per USP 797. BUD based on a successful sterility and endotoxin test result.	Packaging Requirements	Sterile, light-resistant 5 mL unit dose injection vials suitable for lyophilization.	
Auxiliary Labels	1	Use as directed. Do not exceed prescribed dose.	6	Keep powder at room temperature (20°C – 23°C).
	2	Do not used if product changes color.	7	May impair mental and/or physical ability. Use care when operating a car or machinery.
	3	Keep out of reach of children.	8	Discard container after use.
	4	Discard in the presence of particulate matter.	9	Do not take with alcohol, sleep aids, tranquilizers or other CNS depressants.
	5	Protect from light.	10	Consult your health care practitioner if any prescription or over-the-counter medications are currently being used or are prescribed for future use.
Pharmacist Instructions	<p>Add any auxiliary labels specific to the API to the dispensing container as deemed necessary.</p> <p><b><u>Reconstitution Procedure:</u></b></p> <p><b>Prior to use, reconstitute, <u>using an appropriate aseptic technique</u>, with 5 mL of Sterile Water for Injection, USP, the powder blend. Warm up to facilitate the dissolution if necessary (BUD: 24 hours, once reconstituted and kept refrigerated.)</b></p> <p><b>Note: Following reconstitution, use vial only once and discard any remaining solution.</b></p>			
Patient Instructions	Contact your pharmacist in the event of adverse reactions.			



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## REFERENCES

1.	Parental Preparations. In: Allen, LV, Jr. <i>The Art, Science and Technology of Pharmaceutical Compounding Fifth Edition</i> . American Pharmaceutical Association; 2016: 399.
2.	Mannitol. In: Rowe RC. <i>Handbook of Pharmaceutical Excipients, 7<sup>th</sup> Edition</i> . American Pharmaceutical Association; 2012: 479.
3.	Labetalol Hydrochloride. In: Sweetman SC, ed. <i>Martindale: The Complete Drug Reference, 36<sup>th</sup> Edition</i> . London, England: The Pharmaceutical Press; 2009: 1321.
4.	Labetalol (Monograph). In: O'Neil MJ. <i>The Merck Index 15<sup>th</sup> Edition</i> . Whitehouse Station, NJ: Merck & Co, Inc.; 2013: Monograph #5377.
5.	Labetalol Hydrochloride. In: Trissel LA. <i>Trissel's Stability of Compounded Formulations, 5<sup>th</sup> Edition</i> . American Pharmaceutical Association; 2012: 276.
6.	Labetalol Hydrochloride (Monograph). <i>United States Pharmacopeia XL / National Formulary 35</i> . Rockville, MD. US Pharmacopeial Convention, Inc. 2017: 4758.
7.	USP <797>. <i>United States Pharmacopeia XL / National Formulary 35</i> . Rockville, MD. US Pharmacopeial Convention, Inc. 2017: 683.

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