

## Formulation Record

Name: Dihydroergotamine mesylate  
Strength: 2.5 mg/ml  
Dosage Form: Nasal Spray  
Route of Administration: Inhalation

Date of Last Review or Revision: 01/13/07  
Person Completing Last Review or Revision: Robert Shrewsbury

Formula: For 100 ml

Ingredient	Quantity	Physical Description	Solubility	Therapeutic Activity
Dihydroergotamine mesylate	0.25 g	white powder	1 g/125 ml water, 1 g/90 ml alcohol	smooth muscle stimulant
Alcohol USP	12 ml	clear, nonviscous liquid	miscible with water and glycerin	solvent
Glycerin USP	15 ml	clear, viscous liquid	miscible with water and alcohol	solvent, humectant
Preserved sterile water	qs 100 ml	clear, nonviscous liquid	NA	solvent

### Additional Information:

- The dosing of DHE mesylate spray is usually administered 0.5 mg in each nostril initially, followed in 15 minutes by another dose of 0.5 mg in each nostril for a total of 2.0 mg.
- Preserved sterile water: 0.2 g of methylparaben per 100 ml of distilled water, filtered through a 0.22 micron filter.

### Example Calculations:

- A nasal spray bottle **without a metered dose nasal pump** will need to be calibrated for the patient. **Prime the spray bottle first.** Weigh the nasal spray bottle with the solution. Have the patient hold the spray bottle in an upright position and deliver ten sprays into a disposable plastic bag or paper towel. Weigh the container a second time, subtract the value from the original weight, and divide by ten. This will be an average weight of solution delivered per squeeze. Convert the weight of solution to a volume of solution assuming a specific gravity of one (1.00). Determine the amount of DHE delivered in each squeeze using a solution concentration of 2.5 mg/ml. Then determine the number of squeezes needed to deliver a 0.5 mg dose.
- A bottle **with a metered dose nasal pump** will also need to be calibrated. Repeat the procedure using a plastic bottle with a metered dose nasal pump.

### Equipment Required:

- 150 ml beaker
- prescription balance
- 0.22 micron membrane filter, 60 ml syringe
- plastic nasal spray bottle with non-metered dose nasal pump
- plastic bottle with metered dose nasal pump

### Method of Preparation:

- Calibrate a 150 ml beaker to the final volume.
- Accurately weigh the powder.
- Dissolve the dihydroergotamine mesylate in the alcohol and glycerin. Mix well.
- Add preserved sterile water to make the desired final volume.
- Sterilize the solution through a 0.22 micron membrane filter into an appropriate final container.

**Description of Finished Product:**

Clear, colorless liquid with low viscosity and free from particles

**Quality Control Procedures:**

1. Record the following information for a spray bottle without a metered dose nasal pump. Use 10 squeezes keeping in mind to apply equal pressure on each side of the container.

<b>Original Weight of Container with Solution</b>	
<b>Weight After 10 Squeezes</b>	
<b>Weight Difference</b>	
<b>Weight per Squeeze</b>	
<b>Volume Dispensed per Squeeze</b>	
<b>Amount of DHE Dispensed per Squeeze</b>	
<b># of Squeezes Needed to Dispense 0.5 mg</b>	

2. Record the following information for a bottle with a metered dose nasal pump. Use 10 actuations of the nasal pump.

<b>Original Weight of Container with Solution</b>	
<b>Weight After 10 Actuations</b>	
<b>Weight Difference</b>	
<b>Weight per Actuation</b>	
<b>Volume Dispensed per Actuation</b>	
<b>Amount of DHE Dispensed per Actuation</b>	
<b># of Actuations Needed to Dispense 0.5 mg</b>	

3. Determine the concentration of DHE in your spray bottle (without a metered dose nasal pump). Transfer about three milliliters of product into a methacrylate cuvette. Read the absorbance at 270 nm with a spectrophotometer and use the standard curve provide in lab to determine the concentration of the product. Determine the concentration using two samples from the sample product. Use the blank spectrophotometric solution to zero the spectrophotometer.

<b>Sample Number</b>	<b>Absorbance @ 270 nm</b>	<b>Concentration of DHE in Product (mg/ml)</b>
1		
2		
Average	xxxxxxx	

**Packaging Container:**

- Package in a plastic bottle with metered dose nasal pump.

**Storage Requirements:**

Store at room temperature.

**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. The presence of methylparaben as a preservative allows the formulation to be preserved the 14 days without refrigeration.

**Label Information:**

For nasal use only  
Protect from light  
Do not use if discolored

**Source of Recipe:**

International Journal of Pharmaceutical Compounding 2:149, 1998

**Literature Information:**

Remington: The Science and Practice of Pharmacy, 19<sup>th</sup> edition, p. 1053, © 1995