

ASSAY AND IMPURITY METHOD

FOR

DURACOR TABLETS

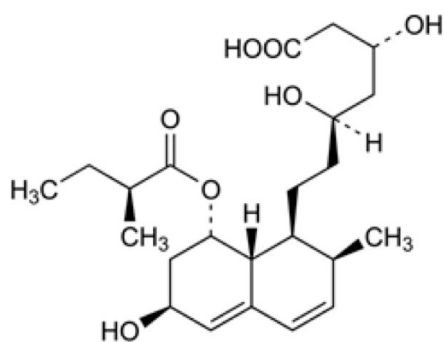
BY HPLC

## METHOD APPROVALS

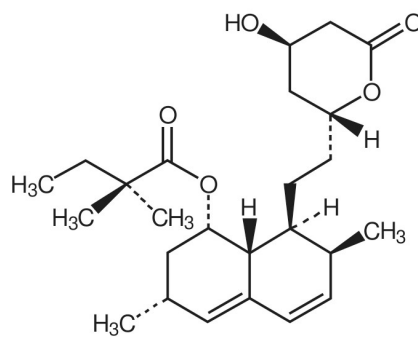
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## INTRODUCTION

Assay and impurity testing is routinely used by pharmaceutical companies in developing drug formulations (combinations of ingredients in tablets/capsules), monitoring batch-to-batch variations in potency, purity, and stability. The assay and impurity testing of Duracor will be determined using a separation and quantitation technique called High Performance Liquid Chromatography (HPLC). HPLC is a separation technique that uses a flowing liquid (mobile phase) flowing past a solid (stationary phase) to separate complex mixtures. In the analysis of Duracor Tablets, the active ingredient is propactaline and the major impurity is the degradation product hydropactaline. Both of these compounds are organic molecules that can absorb UV light. The HPLC uses a UV detector to identify and quantify these compounds. The structures of propactaline and hydropactaline are shown below:



propactaline



hydropactaline

Each of these molecules spend unique and different amounts of time on the stationary phase. By analyzing a standard solution of propactaline along with Duracor tablets, we can determine the amount of active ingredient propactaline and impurity hydropactaline in the tablets.

## TEST METHOD

Assay and impurity method in Norvin Pharma monograph “Duracor”, current version.

Chromatographic Conditions:

HPLC Column – Phenomenex Luna C18 (2) 3  $\mu\text{m}$ , 4.6 x 50 mm

Mobile Phase – 68/32/0.1 water/methanol/phosphoric acid

Flow Rate – 1.3 mL/min

Injection Volume – 7  $\mu\text{L}$

Detection Wavelength – 230 nm

Run Time – 5 min

**Sample Extraction Solvent:**

95/5 methanol/acetic acid

**Diluent:**

90/10 water/methanol

Number of Tablets to be Tested:

2 tablets – Duracor (325 mg propactaline)

Requirements:

Propactaline Assay – not less than 92.3% (300 mg) and not greater than 107.7% (350 mg) label claim (325 mg)

Hydropactaline (degradation impurity) – not more than 2.5%

Other impurities – not more than 1.0%

## **PROCEDURE**

### **Standard Preparation:**

Prepare in duplicate, label Standard 1 and Standard 2

1. Accurately weigh approximately 40 mg of propactaline and transfer into a 50 mL volumetric flask.
2. Add approximately 30 mL of Sample Extraction Solvent (95/5 methanol/acetic acid) and sonicate for 2 min or until all solid is dissolved.
3. Dilute to volume with Sample Extraction Solvent and mix well.
4. Using a volumetric pipet, transfer 5.0 mL of this solution to a 25 mL volumetric flask.
5. Dilute to volume with Diluent (90/10 water/methanol) and mix well.

### **Sample Preparation:**

1. Grind two tablets using a mortar and pestle and transfer into a 200 mL volumetric flask.
2. Measure approximately 100 mL of Sample Extraction Solvent (95/5 methanol/acetic acid) and use some of it to rinse the mortar into the sample flask
3. Add the rest of the Sample Extraction Solvent to the flask and shake for 15 min.
4. Dilute to volume with Diluent (90/10 water/methanol) and mix well.
5. Filter a 10 mL portion of the sample through a 0.45  $\mu\text{m}$  nylon syringe filter.
6. Using a volumetric pipet, transfer 5.0 mL of this filtered solution to a 100 mL volumetric flask.
7. Add approximately 15 mL of methanol to the flask.
8. Dilute to volume with Diluent and mix well.

### **Blank Preparation:**

1. Add approximately 5 mL of Sample Extraction Solvent to a 25 mL volumetric flask.
2. Dilute to volume with Diluent and mix well.

### **Analytical Procedure:**

Use the following injection sequence:

Standard 1, Standard 1, Standard 1, Standard 2, Blank, Sample 1, Sample 2, ....Sample x,  
Standard 1

### **System Suitability:**

For results to be acceptable, the following conditions must be met:

Retention Time of Propactaline – between 3.5 and 4.5 min

Injection Precision – peak area for triplicate injections of propactaline standard must have a relative standard deviation (RSD) of  $\leq 2.0\%$ .

Standard Precision – peak area response (peak area/standard weight) for Standard 2 must be within  $\pm 3.5\%$  of average peak area response for Standard 1 from the Injection Precision injections

Blank – must provide a clean baseline between 0.7 min and 5.0 min

Final Standard Injection – peak area for the final injection of Standard 1 must be within  $\pm 2.0\%$  of average peak area for Standard 1 from the Injection Precision injections

### **EVALUATION OF RESULTS**

Once system suitability has been established, compare the assay and impurity values against the specification requirements.