

## Short Communication

# Spectrophotometric determination of Metclopamide Hcl using Solochrome black-T

J. Dwivedi<sup>1</sup>, R. Chauhan<sup>1</sup>, S. Sharma<sup>1</sup>, Singhal Manmohan<sup>2</sup>, Yashwant<sup>2</sup>, Ganesh N. Sharma<sup>2</sup>

<sup>1</sup>Department of Pharmaceutical Chemistry, Banasthali University, Rajasthan  
<sup>2</sup>School of Pharmaceutical Science, Jaipur National University, Jaipur, Rajasthan

### ABSTRACT

A simple and sensitive visible spectrophotometric method have been developed for the quantitative determination of Metclopamide HCl in its different dosage form (tablet, oral solution and injection). The method is based on the ion pair extraction with chloroform at pH 2.0 using Solochrome black –T as the ion pairing reagent. The spectrophotometric measurement was carried out at the absorption maximum at 505 nm. Beer's law was obeyed in the concentration range of 5- 50 µg/ml with the reagent. The results obtained with the proposed method are in good agreement with the labeled amounts when marketed pharmaceutical preparations are assayed. The recovery was in the range of 98.5-101.5%. Results obtained are statistically validated and found to be reproducible.

**KEYWORDS:** Metclopamide, solochrome black t, spectrophotometer.

### INTRODUCTION

Metclopamide is chemically 4-amine, 5-chloro- N - [2(diethyl amino)ethyl] 2-methoxymono- hydrate Hydrochloride<sup>1</sup>. Metclopamide- HCl (MCP) stimulates motility of the upper gastrointestinal tract and is used in the management of the some form of nausea and vomiting in gastro esophagus reflux and gastric stasis<sup>[2]</sup>. The drug and its formulation are official in IP<sup>[2]</sup>, BP<sup>[3]</sup> and USP<sup>[4]</sup>. The method reported for its estimation includes HPLC <sup>[2-4]</sup>, potentiometriy <sup>[2,3]</sup> and spectrophotometry <sup>[4]</sup>. The recent analytic work is based on the formation of ion pair complexes with Solochrome Black –T, which is extracted into chloroform. The absorption maximum at 505 nm and Beer's law is obeyed in the concentration range of 5-50 µg/mL. Spectrophotometric parameters are established for standardization of the method including statically analysis of the data.

### MATERIALS AND METHODS:

A Shimadzu UV/vis double beam spectrophotometer (Model 1601) with 1 cm matched quartz was used for all the spectral measurement. All reagents used are of analytical reagent grade from S.D. fine chem., Mumbai.

#### Reagents:

- (i) Double Distilled water
- (ii) Solochrome Black –T (0.01 M as ion pair reagent)
- (iii) Chloroform

**Preparation of dye solution:** 1 gm of dry Solochrome Black-T was weighed accurately and dissolved in 40 ml of water in a 100 ml volumetric flask and diluted up to the mark with water. Freshly prepared aqueous solution

contains 0.1% of Solochrome Black –T.

**Preparation of standard stock drug solution:** Aqueous stock solution of drug was prepared by dissolving 100 mg drug in 100 ml double distilled water. So the concentration of stock solution would be 1.0 mg/ 1.0 ml of MCP. Volumetric flask of 200 ml was labeled as 1 to 10, in these volumetric flasks add 1 ml to 10 ml of stock standard solution respectively. Now in these labeled flask buffer solution of pH 2.0, 50 ml of the 0.2 M potassium chloride and 13 ml of 0.2 M HCl was added. This is finally made up to the volume 100ml. A series of dilution ranging from 5-50 µg / ml was prepared.

**Table 1. Optical characteristics and precision**

S.No.	Description	Value
1	$\lambda_{max}$ (nm)	505 nm
2	Beer's law limit	5- 50 µg/ml
3	Molar Absorptivity	2.0169 mole <sup>-1</sup> cm <sup>-1</sup>

#### Sample solution:

*For tablet:* Tablet powder equivalent to 10 mg of MCP was dissolved in 50 ml of water and filtered. The filtrate was made up to 100 ml with distilled water. The final concentration of solution was 0.1 mg / ml.

*For oral solution:* Aliquots equivalent to 10 mg of MCP was dissolved in 50 ml of water and filtered. The filtrate was made up to 100 ml with distilled water. The final concentration of solution was 0.1 mg / ml.

*For injection:* Aliquots equivalent to 5 mg of MCP was dissolved in 25 ml of water and filtered. The filtrate was made up to 100 ml with distilled water. The final concentration of solution was 0.05 mg / ml.

**Procedure:** A series of standard stock solution ranging from 5-50 µg / ml was used to prepare standard graph by spectrophotometric method. Now samples from different dosage form, 1 ml (tablet), 1 ml (oral solution) and 1 ml(injection) were transferred into a series of

separating funnel and the volume was adjusted to 10 ml with distilled water. Add 5 ml of dye solution and 5 ml of buffer pH 2 in each case. 15 ml of chloroform was added to each funnel and content was shaken for 2 min. The two phases were allowed to separate and the chloroform layer was collected for analysis. The absorption of chloroform layer was measured at absorption maximum 505 nm against their reagent blank.

**Table 2. Evaluation of Metchlopromide. HCl in pharmaceutical preparations**

S. No.	Stander/sample	Labeled amounts (mg)
1	Std, Drug delivery	99.50%
2	For tablet	98.90%
3	For oral solution	99.70%
4	For injection	99.80%

### RESULTS AND DISCUSSION

The Beer's law limit and molar absorptivity are given in table 1 and the result of recovery from experiment in table 2. The values of analysis of pharmaceutical dosage forms (table 2) confirmed suitability of the method for

routine analysis. All the active ingredients and the excipients usually presenting pharmaceutical dosage form did not interrupt. The method is found to be simple, rapid, sensitive and accurate.

### REFERENCES:

1. Klein C, Brin MF, Kramer P, Sena-Esteves M, de Leon D, Doheny D, Bressman S, Fahn S, Breakefield XO, Ozelius LJ: Association of a missense change in the D2 dopamine receptor with myoclonus dystonia. Proc Natl Acad Sci U S A. 1999, 96(9), 173-6.
2. J.E.F. Reynolds, "Martindale: The extra pharmacopoeia" Eds 30. The pharmaceutical press, London, (1993) p.892.
3. Pharmacopoeia of India, vol. I, Eds 4, Controller of Publication. Ministry of Health, Govt. of India, New Delhi,(1996( p. 484-86.
4. British Pharmacopoeia, Vol. I & II HMSO Publication Central, London (1998) p. 888, 1810-12.