

# Indian Journal of Pharmaceutical Sciences

Scientific Publication of the Indian Pharmaceutical Association

Indexed in Ind MED, EMBASE/Excerpta Medica, International Pharmaceutical Abstracts, Chemical Abstracts.

Volume 69

Number 6

November-December 2007

## CONTENTS

### REVIEW ARTICLES

- Cholesteryl Ester Transfer Protein: A Potential Target for the Treatment of Coronary Artery Disease**  
HARSHA PATEL, JIGNA SHAH, SUNITA PATEL AND I. S. ANAND 735-740
- Properties and Formulation of Oral Drug Delivery Systems of Protein and Peptides**  
A. SEMALTY, MONA SEMALTY, R. SINGH, S. K. SARAF AND SHUBHINI SARAF 741-747

### RESEARCH PAPERS

- Fabrication and Evaluation of Asymmetric Membrane Osmotic Pump**  
C. S. CHAUHAN, M. S. RANAWAT AND P. K. CHOUDHURY 748-752
- Studies of Disintegrant Properties of Seed Mucilage of *Ocimum gratissimum***  
RAVIKUMAR, A. A. SHIRWAIKAR, ANNIE SHIRWAIKAR, S. LAKHSHMANA PRABU, R. MAHALAXMI, K. RAJENDRAN AND C. DINESH KUMAR 753-758
- Simultaneous Spectroscopic Estimation of Ezetimibe and Simvastatin in Tablet Dosage forms**  
S. J. RAJPUT AND H. A. RAJ 759-762
- Formulation and Optimization of Carbamazepine Floating Tablets**  
D. M. PATEL, N. M. PATEL, N. N. PANDYA AND P. D. JOGANI 763-767
- Effects of *Medicago sativa* on Nephropathy in Diabetic Rats**  
M. S. MEHRANJANI, M. A. SHARIATZADEH, A. R. DESFULIAN, M. NOORI, M. H. ABNOSI AND Z. H. MOGHADAM 768-772
- Development of Hospital Formulary for a Tertiary Care Teaching Hospital in South India**  
R. J. D'ALMEIDA, LEELAVATHI D. ACHARYA, PADMA G. M. RAO, J. JOSE AND RESHMA Y. BHAT 773-779
- Simultaneous Spectrophotometric Estimation of Rosiglitazone Maleate and Glimepiride in Tablet Dosage Forms**  
ANJU GOYAL AND I. SINGHVI 780-783
- Preparation, Characterization and Antimicrobial Activity of Acrylate Copolymer Bound Amoxicillin**  
J. S. PATEL, H. R. PATEL, N. K. PATEL AND D. MADAMWAR 784-790
- Haematitic Evaluation of *Lauha Bhasma* and *Mandura Bhasma* on HgCl<sub>2</sub>-Induced Anemia in Rats**  
P. K. SARKAR, P. K. PRAJAPATI, A. K. CHOUDHARY, V. J. SHUKLA AND B. RAVISHANKAR 791-795
- RPHPLC Method for the Estimation of Glibenclamide in Human Serum**  
S. D. RAJENDRAN, B. K. PHILIP, R. GOPINATH AND B. SURESH 796-799
- 2D QSAR of Arylpiperazines as 5-HT<sub>1A</sub> Receptor Agonists**  
URMILA J. JOSHI, SONALI H. TIKHELE AND F. H. SHAH 800-804
- Antiproliferative and Cancer-chemopreventive Properties of Sulfated Glycosylated Extract Derived from *Leucaena leucocephala***  
AMIRA M. GAMAL-ELDEEN, H. AMER, W. A. HELMY, H. M. RAGAB AND ROBA M. TALAAT 805-811

### SHORT COMMUNICATIONS

- Simultaneous Derivative and Multi-Component Spectrophotometric Determination of Drotaverine Hydrochloride and Mefenamic Acid in Tablets**  
P. P. DAHIVELKAR, V. K. MAHAJAN, S. B. BARI, A. A. SHIRKHEDKAR, R. A. FURSULE AND S. J. SURANA 812-814
- Design and Synthesis of Substituted 2-Naphthylxyethylamines as Potential 5-HT<sub>1A</sub> Antagonists**  
URMILA J. JOSHI, R. K. DUBE, F. H. SHAH AND S. R. NAIK 814-816
- Diuretic Activity of *Lagenaria siceraria* Fruit Extracts in Rats**  
B. V. GHULE, M. H. GHANTE, P. G. YEOLE AND A. N. SAOJI 817-819
- Determination of Racecadotril by HPLC in Capsules**  
S. L. PRABU, T. SINGH, A. JOSEPH, C. DINESH KUMAR AND A. SHIRWAIKAR 819-821
- Novel Spectrophotometric Estimation of Frusemide Using Hydrotropic Solubilization Phenomenon**  
R. K. MAHESHWARI, S. DESWAL, D. TIWARI, N. ALI, B. POTHEH AND S. JAIN 822-824
- In Vivo* Pharmacokinetic Studies of Prodrugs of Ibuprofen**  
ABHA DOSHI AND S. G. DESHPANDE 824-827
- Protective Effect of *Tamarindus indica* Linn Against Paracetamol-Induced Hepatotoxicity in Rats**  
B. P. PIMPLE, P. V. KADAM, N. S. BADGUJAR, A. R. BAFNA AND M. J. PATIL 827-831
- Simultaneous Estimation of Atorvastatin Calcium and Amlodipine Besylate from Tablets**  
P. MISHRA, ALKA GUPTA AND K. SHAH 831-833
- Development and Validation of a Simultaneous HPTLC Method for the Estimation of Olmesartan medoxomil and Hydrochlorothiazide in Tablet Dosage Form**  
N. J. SHAH, B. N. SUHAGIA, R. R. SHAH AND N. M. PATEL 834-836
- Orodispersible Tablets of Meloxicam using Disintegrant Blends for Improved Efficacy**  
P. V. SWAMY, S. H. AREEFULLA, S. B. SHIRSAND, SMITHA GANDRA AND B. PRASHANTH 836-840
- Spectrophotometric Method for Ondansetron Hydrochloride**  
SRADHANJALI PATRA, A. A. CHOUDHURY, R. K. KAR AND B. B. BARIK 840-841
- HPTLC Determination of Artesunate as Bulk Drug and in Pharmaceutical Formulations**  
S. P. AGARWAL, A. ALI AND SHIPRA AHUJA 841-844
- Simultaneous Spectrophotometric Estimation of Metformin and Repaglinide in a synthetic mixture**  
J. R. PATEL, B. N. SUHAGIA AND B. H. PATEL 844-846
- Synthesis and Antiinflammatory Activity of Substituted (2-oxochromen-3-yl) benzamides**  
V. MADDI, S. N. MAMLEDESAI, D. SATYANARAYANA AND S. SWAMY 847-849
- Evaluation of Hepatoprotective Activity of Ethanol Extract of *Prosopium acerifolium* Ster Leaves**  
S. KHARPATE, G. VADNERKAR, DEEPTI JAIN AND S. JAIN 850-852
- New Antihistaminic Agents: Synthesis and Evaluation of H1-Antihistaminic actions of 3-[(N,N-Dialkylamino)alkyl]-1,2,3,4-tetrahydro-(1H)-thioquinazolin-4(3H)-ones and Their oxo Analogues**  
M. B. RAJU, S. D. SINGH, A. RAGHU RAM RAO AND K. S. RAJAN 853-856

# Spectrophotometric Method for Ondansetron Hydrochloride

SRADHANJALI PATRA\*, A. A. CHOUDHURY, R. K. KAR AND B. B. BARIK

University Department of Pharmaceutical Sciences, Utkal University, Vani Vihar, Bhubaneswar - 751 004, India

## Patra, *et al.*: Spectrophotometric Method for Ondansetron

**A new simple, sensitive spectrophotometric method in UV region has been developed for the estimation of ondansetron in bulk and solid dosage form. It shows maximum absorbance at 310 nm with water. Beer's law obeys in the concentration range of 5-15 µg/ml. Results of the analysis were validated statistically and by recovery studies.**

**Key words:** Spectrophotometric method, ondansetron HCL, optical characteristics, recovery study

Ondansetron, which is a specific antiemetic drug, is used in cancer chemotherapy and induced nausea and vomiting<sup>1</sup>. Chemically, it is ( $\pm$ ) 1,2,3,9-tetrahydro-9-methyl-3-[(2-methyl-1H-imidazol-1-yl)methyl]-4H-carbazol-4-one, monohydrochloride dihydrate<sup>2</sup> is a selective 5HT<sub>3</sub> antagonist. It acts both, peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone of the area postrema<sup>3</sup>.

The drug is white to off white crystalline powder, odourless, soluble in water, methanol and normal saline<sup>3</sup>. Literature survey revealed very few analytical methods which include only HPLC method for the estimation of ondansetron<sup>2</sup>. The authors have developed a simple sensitive and reproducible UV spectrophotometric method for the determination of ondansetron in pure form as well as in dosage forms, which are described in present communication.

All chemicals used were of analytical grade. The commercially available tablets were procured from local market. Spectral and absorbance measurements

were made on Shimadzu double beam UV/Vis spectrometer UV 2101.

About 10 mg of pure ondansetron was accurately weighed and dissolved in 10 ml of water. The above stock solution was further diluted with the same to get a working standard solution of 5 to 15 µg/ml. Aliquots of test solution of ondansetron were transferred into a series of 10 ml volumetric flask and the final volume was brought to 10 ml with water. The absorbance was measured at 310 nm against water and the amount of ondansetron present in the sample solution was computed from calibration curve.

The optical characteristics such as Beer's law limits, Sandell's sensitivity, Molar extinction coefficient

**TABLE 1: OPTICAL CHARACTERISTICS, PRECISION AND ACCURACY OF THE PROPOSED METHOD**

Parameters	Method
Beer's law limit (µg/ml)	5-15
Molar extinction coefficient (mol <sup>-1</sup> cm <sup>-1</sup> )	15.29×1000
Sandell's sensitivity (µg/cm <sup>2</sup> /0.001 absorbance unit)	0.002386
Correlation coefficient (r) <sup>1</sup>	1.00
Regression <sup>2</sup>	
Slope (a)	0.042
Intercept (b)	-0.006

<sup>1</sup>Y = a + bC, where C is concentration of analyte (mg/ml) and Y is absorbance unit. <sup>2</sup>Calculated from three determinations

**\*For correspondence**

E-mail: sradhanjali2002@yahoo.co.in

**TABLE 2: RESULTS OF RECOVERY STUDY OF ONDANSETRON HCL**

Labelled amount (mg)	Amount of drug added (mg)	Amount of drug obtained <sup>1</sup> (mg)		Percentage recovery <sup>2</sup> Proposed method	Standard deviation	% Coefficient of variation
		Official method	Proposed method			
8	10	7.8	7.7	98.71	0.7390	0.7454
8	20	7.8	7.8	100.00		
8	30	7.9	7.8	98.73		

<sup>1</sup>Average of three determinations. <sup>2</sup>Recovery of amount added to the pharmaceutical formulation (average of three determinations)

(calculated from the eight measurements containing 3/4<sup>th</sup> of the amount of upper Beer's law limits of ondansetron) and correlation were calculated for the methods and the results are summarized in Table 1.

The methods were applied for the analysis of the drugs in the tablet formulation. To evaluate the validity and reproducibility of the methods, known amount of pure drug was added to the previously analysed by proposed methods and mean percent recovery was found to be 99.14 respectively. Interference studies revealed that the common excipients and other additives usually present in the dosage form did not interfere in the proposed methods. In conclusion, the proposed methods appear to be economical, simple, sensitive, reproducible and accurate enough for the routine determination of ondansetron in bulk as well as in tablet.

## ACKNOWLEDGEMENTS

The authors thank M/S Natco Pharma limited, Hyderabad for providing gift sample of ondansetron HCl.

## REFERENCES

1. Anthony M, Sorkin EM. Ondansetron an update of its therapeutic use in chemotherapy-induced and post operative nausea and vomiting. *Drugs* 1993;45:931-52.
2. The United State Pharmacopoeia, 24<sup>th</sup> ed. Philadelphia: National Publishing; 2000. p. 1218.
3. The Physician Desk Reference, 56<sup>th</sup> ed. Medical Economics: Thomson Healthcare: 2002. p. 1703.

Accepted 20 December 2007

Revised 9 July 2007

Received 30 May 2006

Indian J. Pharm. Sci., 2007, 69 (6): 840-841