

RESEARCH ARTICLE

SIMULTANEOUS ESTIMATION OF NAPROXEN AND DOMPERIDONE USING UV SPECTROPHOTOMETRY IN TABLET DOSAGE FORM

Sunil Singh^{1*}, Surabhi Sharma¹, Ajit Kumar Yadav² and Hemendra Gautam³

¹Department of Pharmaceutical Chemistry, Invertis Institute of Pharmacy, Invertis University, Bareilly-243 123, Uttar Pradesh, India

²Department of Pharmaceutics, Invertis Institute of Pharmacy, Invertis University, Bareilly-243 123, Uttar Pradesh, India

³Department of Pharmacology, Smt. Vidyawati College of Pharmacy, Jhansi-284 121, Uttar Pradesh, India

*E-mail: rssunil29@rediffmail.com

Tel.: +91 8859120888.

Received: May 02, 2013 / Revised: June 25, 2013 / Accepted: June 26, 2013

An accurate, specific and precise UV spectrophotometric method was developed for the simultaneous determination of naproxen (NAP) and domperidone (DOM) in tablet dosage form. The optimum conditions for the analysis of the drug were established. The maximum wavelength (λ_{max}) was found to be 271 nm for NAP and 287 nm for DOM. The linearity of the proposed method was found in the range of 10-35 $\mu\text{g/ml}$ and 5-30 $\mu\text{g/ml}$ for NAP and DOM respectively. Calibration curves showed a linear relationship between the absorbance and concentration. The line equation for NAP $Y = 0.0222X - 0.0226$ with r^2 of 0.9999 and for DOM $Y = 0.0292X - 0.0149$ with r^2 of 0.9998 was obtained. Validation was performed as per ICH guidelines for linearity, accuracy, precision, LOD and LOQ. The LOD was found to be 0.0454 and 0.656 $\mu\text{g/ml}$ for NAP and DOM and the LOQ was found to be 0.151 and 2.18 $\mu\text{g/ml}$ for NAP and DOM respectively. The proposed method was simple, sensitive, precise, accurate, quick and useful for routine analysis of NAP and DOM in tablet formulations.

Key words: Simultaneous equation method, Validation, Naproxen, Domperidone, UV spectrophotometry.

INTRODUCTION

Naproxen (NAP) is a propionic acid derivative related to the arylacetic acid group of nonsteroidal anti-inflammatory drugs which is chemically (2S)-2-(6-methoxynaphthalen-2-yl)propanoic acid (**Figure 1a**). Naproxen is used to treat pain or inflammation caused by conditions such as arthritis, ankylosing spondylitis, tendinitis, bursitis, gout, or menstrual cramps. It works by reducing hormones that cause inflammation and pain in the body. Like other NSAIDs, naproxen produces disturbances in the gastrointestinal tract (Drugs.com). Domperidone (DOM) is chemically 5-chloro-1-[1,3-(2,3-dihydro-2-oxo-1H-benzimidazol-1-yl) propyl]-4-piperidinyl-1,3-dihydro-2H-benzimidazol-2-one] (**Figure 1b**), a dopamine antagonist which is usually given along with proton pump inhibitors. Domperidone does not cross the blood brain barrier and therefore has fewer adverse CNS effects than other dopamine antagonist.

dazol-1-yl) propyl]-4-piperidinyl-1,3-dihydro-2H-benzimidazol-2-one] (**Figure 1b**), a dopamine antagonist which is usually given along with proton pump inhibitors. Domperidone does not cross the blood brain barrier and therefore has fewer adverse CNS effects than other dopamine antagonist.

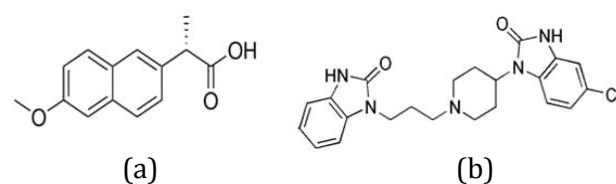


Fig. 1. Structures of (a) NAP and (b) DOM