Int. J. Pharm. Investigation, 2024; 14(2):371-377.
https://www.jpionline.org

Original Article

Multi-Centered Prospective Observational Study on Prescribing Pattern of Anti-Hypertensives in Diabetes Mellitus Type 2 and Chronic Kidney Disease Patients in Eastern Districts of Telangana

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ABSTRACT

Background: The most prevalent lifestyle diseases are Diabetes Mellitus type 2 (DM2) and Hypertension (HTN), especially in older age groups, which leads to Chronic Kidney Disease (CKD) as the most possible comorbidity. Management of HTN involves various drugs with fixed doses and combinations, while specialized regimens are implemented for patients with other comorbidities like DM2 and CKD. Treatment of blood pressure in diabetics is complicated and requires combinational therapy with regular monitoring of both blood pressure and blood glucose to prevent diabetic nephropathy. Chronic Kidney Disease (CKD) describes the gradual loss of kidney function, and it is the major complication of DM and HTN. Management of CKD involves determining the cause of disease and eliminating or controlling it, with most CKD cases intensified by HTN, DM, infections, hypovolemic conditions, and salt intake. Despite the fact that lifestyle modifications and pharmacological interventions are frequently necessary to achieve the best blood pressure goals in patients with diabetes and CKD. **Materials and Methods:** This cross-sectional study collected data on 300 patients, of whom 200 had type 2 diabetes and 100 had CKD as concomitant diseases and were regularly using anti-hypertensives. **Results:** The results of our study are astonishing because minimizing or avoiding risk factors like alcohol and smoking have improved the patient condition significantly in both DM2 and CKD, along with HTN. Starting with ACEi and ARBs initially had a great impact on achieving the blood pressure goal in DM2. Specific beta blockers are recommended in patients with CVD risk. Salt restriction, using antihypertensives like ARBs, and CCBs are used predominantly to treat blood pressure and proteinuria in CKD patients. Diuretics are implemented to treat symptoms like edema and low urine output, to reduce fluid overload on the heart, and to prevent heart failure. **Conclusion:** The clinical pharmacist plays an important role in designing the therapeutic regimen and lifestyle changes for the best patient outcome.

Keywords: Prescribing pattern, Anti-hypertensives, Diabetes type 2, Hypertension, Chronic kidney disease

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Received: 12-10-2023;
Revised: 25-11-2023;
Accepted: 09-01-2024.

INTRODUCTION

The most prevalent lifestyle diseases are Hypertension (HTN) and Diabetes Mellitus type 2 (DM2), especially in older age groups, which leads to Chronic Kidney Disease (CKD), the most possible comorbidity. All these conditions will hamper the patient's quality of life.

Hypertension is known as persistently elevated blood pressure.[1] Most of the cases are classified as essential hypertension.[2] Studies suggest that excessive salt intake, smoking, alcohol, genetics, chronic stress, and endocrine disorders are the major risk factors for HTN.[3,4] Adults in India generally have a 30% prevalence of hypertension, with 34% in urban areas and 28% in rural areas.[5] Management of HTN has various drugs with fixed doses and combinations; specialized regimens will be implemented in patients with other comorbidities like DM2 and CKD.[6] Diabetes is a chronic, metabolic disease which is characterized by elevated blood glucose (blood sugar) levels, which leads over time to serious complications like diabetic retinopathy, diabetic nephropathy, and diabetic neuropathy. Treating blood pressure

OPEN ACCESS
EPUBL
DOI: 10.5530/ijpi.14.2.46

Int. J. Pharm. Investigation, 2024; 14(1):225-231.
https://www.jpionline.org

Original Article

Socio-economic Status and Depressive Symptoms in Diabetes Patients: A Cross-Sectional Study

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ABSTRACT

Background: Diabetes is persistent illness that develops mostly when the body produces insufficient amount of the insulin hormone. The insulin hormone regulates blood glucose levels. In recent epidemiological research studies exposed that diabetes patients were likely to experience depression. Independent of glycemic control, insulin therapy, lifestyle variable and diabetes complications, severe hypoglycemia was strongly correlated with the intensity of depressive symptoms in individuals with DM2, who weren't taking any antidepressants. Aim: The present study aimed to assess the impact of socio-economic status in the elevation of depressive symptoms among diabetes patients. **Materials and Methods:** A prospective cross-sectional observational study was conducted for the age of >30 to 100 with sample size of 215. **Results:** In our study in age group of 51-70 (52.06%), (72.55%) males, people with positive family history (57.67%), people with co-morbidities (65.49), illiterates (46.51%), skilled workers (37.67%) people with more than 1.80K (40%) showed major depressive symptoms, people with more than 1-5 years durations of disease (55.81%) showed major depression. According to socio-economic scale people belong to (40.93%) upper middle class are more prone to elevated depressive symptoms. According to PHQ-9 scale people showed more mild depression (38.13%). **Conclusion:** The study concludes that there are multiple factors like Age, Gender, Family history, Socio-economic status, can leads to depressive symptoms in diabetes patients.

Keywords: Diabetes, Depression, Socio-economic status, PHQ-9 Scale, Kuppuswamy scale, Quality of life.

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Received: 21-09-2023;
Revised: 16-10-2023;
Accepted: 30-11-2023.

INTRODUCTION

Diabetes is a persistent illness that develops mostly when the body produces insufficient or improper amounts of the hormone insulin or may be ineffective utilization of insulin. During uncontrolled condition that can gravely impair various body systems, including the neurons and blood vessels.[1,2]

However, diabetic patients are prone to more stress compared with normal people because of maintaining a strict diet and regular exercise to stay in good health, monitoring blood glucose levels, regular follow-up, managing symptoms, and constantly keeping an eye out for complications. As a result, people experience stress, worry, and sadness.[3,4]

Studies show some evidence that occurrence of depression in diabetes patients is associated with low socio-economic status. The small evidence base that considers diabetes and depression in low and middle income countries is out of step with the scale of the burden of disease.[5,6]

Irrespective of the fact that they received a diabetes diagnosis or not, 90686 participants in recent epidemiological research exposed that diabetes patients were more likely to experience depression. The same analysis revealed that those with diabetes who were aware of it had greater rates of anxiety.[7] one argument are that anxiety and sadness are brought on by the psychological strain of having a disease. However, sadness was more common in individuals with previously undetected diabetes and brought on by an unhealthy lifestyle, such as sedentary behavior, a poor diet, or a demanding job.

Independent of glycemic control, insulin therapy, lifestyle variables, and diabetes complications, severe hypoglycemia was strongly correlated with the intensity of depressive symptoms in individuals with DM2, who weren't taking any antidepressants.[8] in individuals with DM2; a meta-analysis study was assessing the connection between neuropathy and depression.[9,10]

OPEN ACCESS
EPUBL
DOI: 10.5530/ijpi.14.1.28

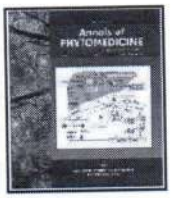
Annals of Phytomedicine 12(2): 765-768, 2023

DOI: http://dx.doi.org/10.54085/ap.2023.12.2.89

Annals of Phytomedicine: An International Journal

http://www.ukaazpublications.com/publications/index.php

Print ISSN : 2278-9839 Online ISSN : 2393-9885



Original Article : Open Access

Phytochemical analysis and *in vitro* anthelmintic activity of methanolic extract of *Samanea saman* (Jacq.) Merr. leaves

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Article Info

Article history
Received 11 July 2023
Revised 29 August 2023
Accepted 30 August 2023
Published Online 30 December 2023

Keywords
Samanea saman (Jacq.) Merr.,
Paralysis
Earthworm
Anthelmintic activity
Piperazine citrate

Abstract

Soil transmitted helminth (STH) infections are among the most common infections worldwide with an estimated 1.5 billion infected people or 24% of the world's population. The high cost of usual anthelmintic drugs and the development of anthelmintic resistance led to evaluation of remedial plants as an alternative source of anthelmintics. *Samanea saman* (Jacq.) Merr. is a popularly grown tropical avenue tree in Asia and Northern America, a member of the Fabaceae. It has antiulcer, antibacterial, antimicrobial, anthelmintic properties. Current study, the methanol extract of leaves of *S. saman* shows anthelmintic activity and shows a positive correlation to the alcohol, and flavonoids contents. The present research aimed to assess the anthelmintic activity of methanolic extract of *S.saman* leaves by *Pheretima posthuma* as test worms. *Piperazine citrate* (15 mg/ml) used as standard. Paralysis and death times were examined, the activity was correlated with piperazine citrate. At higher doses (500 mg/ml), the shortest paralysis time was noted. The earthworm utilized in the study was significantly affected by the methanolic extract of *S. saman* leaves, correlated by earthworm's paralysis and death.

1. Introduction

Samanea saman (Jacq.) Merr., member of the fabaceae family, is used in herbal medicine as an analgesic, anti-inflammatory, diuretic, febrifuge, anthelmintic, and antifungal, as well as for digestive issues. Word "helminth" is originated from Greek word "helminthes," means "worm, refers to a large category of parasitic worms that live inside the body (Patel, *et al.*, 2010). Over two billion people have parasitic worm diseases, according to the World Health Organization. By 2025, it is predicted that 57% of people living in developing nations would be affected (Mulla *et al.*, 2010). Helminth infections are a major contributor to these, particularly in small ruminant production, which results in significant economic losses, including loss of production due to death, weight loss, and decreased milk and meat production (Ketzis *et al.*, 2003; Githiori *et al.*, 2003). Antihelmintics are medicines that either eliminate or kill helminths that are present in gastrointestinal tract, despite the fact that certain species migrate inside tissues or reside there. They injure the host by depriving him of food, resulting in blood loss, organ damage, intestinal, secreting toxic substances, and causing injury to organs. Despite being a major cause of morbidity, helminthiasis seldom results in death (Bundy, 2004). In endemic locations, internal parasitic illnesses hit the population with relentless morbidity. The abdomen, small intestine and large intestine are all infected by these parasites. The aim of research was to determine the anthelmintic activity of methanolic extract of leaves of *S. saman* by *P. posthuma* as test worms.

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The popular names in english include saman, rain tree and monkey pod. Scientific classification of Taxonomy Kingdom: Plantae, Order: Fabales, Family: Fabaceae, Genus: *Samanea saman* (Jacq.) Merr.. It exhibits the synonym names of *Samanea saman* such as *Albizia saman, Enterolobium saman, Inga saman, Pithecellobium saman and Mimosa saman*. *S. saman* on the other hand; leaves are arranged next to twigs and have a noticeable enlargement at the base of the petiole. The leaf measures 2-4 cm when stretched and 1-2 cm when expanded. The largest apical flyers and foliage are grouped into 2-6 sets of pinnae, with each pinna containing 6-16 precious stone-shaped promotions and having stipules that resemble yarn in the leaves. The leaf appears to have sharp edges and is twice as intricately pinnate. The leaf has a spherical organ and a silky state. For a brief time, the leaf appears dry and dreary because of its lustrous green top and its meagerly bristly base. *S. saman* trees lose their leaves in the summer because they are semi deciduous is because of this that it remains leafless for a while before defoliating as soon as there is enough moisture. *S. saman* (rain tree), in moist conditions, appears to be evergreen as a result. Piperazine citrate is the reference standard drug utilized in the study. As a result of the muscle being hyperpolarized, chloride channels are opened, which relaxes the muscle and reduces the ability of acetylcholine to contract the muscle, resulting in flaccid paralysis.

2. Materials and Methods

2.1 Drugs and chemicals

Each chemical employed in the investigation is of analytical quality such as piperazine citrate (SD Fine Chemicals Ltd., Mumbai) and Methanol (Merck, India).

Int. J. Pharm. Investigation, 2023; 13(4):889-894.
https://www.jpionline.org

Original Article

A Prospective Study on Risk Factors, and Prescription Patterns in Urolithiasis Patients in Tertiary Care Hospitals of Khammam Region

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ABSTRACT

Introduction: Urolithiasis is a hard deposit of minerals and salts that form inside the kidney, ureter, and bladder in the urinary system. Kidney stones are a common disease of the urinary tract. Prevention of stones mainly depends on the mechanisms of the stone formation, daily water intake, and food habits. **Aim and Objectives:** A prospective observational study was conducted on risk factors, and prescription patterns in urolithiasis patients. **Materials and Methods:** The study was conducted from August 2022 to February 2023 in Khammam, Telangana. Men and women were included as a sample of subjects aged 18-60 years. The total number of samples was 200. **Results:** Urolithiasis was more commonly observed in males than females aged 18-60. Urolithiasis developed in individuals who consumed less water, frequently ate non-veg, and had a family history of calculi. Out of 200 patients, only 27 patients had complications like AKI, and abdominal pain and painful incomplete urination was the most reported symptoms. **Conclusion:** The prevalence, risk factors, and prescription pattern of urolithiasis were observed in this study. The Formation of Kidney stones may be due to diet, age progression, gender, obesity, genetics, and lifestyle factors. A better understanding of the epidemiology of urolithiasis is further essential to plan effective treatment and preventive strategies.

Keywords: Urolithiasis, Prevalence, Risk factors, Prescription pattern.

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Received: 12-03-2023;
Revised: 24-04-2023;
Accepted: 06-06-2023.

INTRODUCTION

Urolithiasis is the most common urological disease in human beings in the world. It is the most painful and common urological disorder of the urinary system.[1] Now a day, kidney stone formation has significantly increased in all developed countries. Urolithiasis is a hard deposit of minerals and salts that form inside the kidney, ureter, and bladder in the urinary system.[2,3] It is more critical to analyze stones in treating metaphylaxis of residual and repeated stones.[4] In India, mainly calcium oxalate crystals had formed in living beings, and the composition of stones differs from Western countries. In the productive age group, kidney stone affects about 3% of the population.[5] The prevalence means the number of calculi present in a masked population at a particular time. The incidence of stones is described as the number of new stone formations in patients in a given population in the same period.[6] Males and females suffer from urolithiasis in their productive age group.[7] Prevention of stones mainly depends on the mechanisms of the stone formation, daily water intake, and food habits.[8] Urolithiasis is mainly associated with several risks of end-stage renal failure,[9] end-stage of chronic kidney diseases,[10] cardiovascular diseases,[4] diabetes, and hypertension. Sometimes kidney stones are considered a systemic disorder linked to metabolic syndrome.[11] The common etiology of urolithiasis are the patient's occupation, dietary and lifestyle habits, previous medications history, family history of frequent attacks of UTI, and some underlining disorders predisposing to renal calculi formation.[12] Calcium is the main component of oxalate stone in human beings. Supplemental calcium plays a more significant function in kidney stone formation than high dietary calcium intake.

A kidney stone may exist asymptomatically and painless until they travel from the kidney to the ureter and bladder.[13] Based on the size and movement of stones through the urinary tract, signs and symptoms are sudden onset of severe pain, sharp pains in the back and side, lower abdominal pain, hematuria (red or brown blood in urine), constant urination, painful urination, Inability to urinate or a small amount of urine, and The urine looks cloudy,

OPEN ACCESS
EPUBL
DOI: 10.5530/ijpi.13.4.112

Publishing Partner : EManuscript Tech. [www.emanuscript.in]

Ind. J. Pharm. Edu. Res., 2023; 57(3s):s766-s771.
https://www.ijper.org

Original Article

Stability Indicating Reverse Phase-High Performance Liquid Chromatography Method for Simultaneous Estimation of Cabotegravir and Rilpivirine

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ABSTRACT

Background: For the estimation of cabotegravir and rilpivirine in the bulk and pharmaceutical dosage form, a stability-indicating reverse-phase high-performance liquid chromatography method was developed and validated using an inertsil C_{18} (150 x 4.6 mm, 5 µm) column. At a flow rate of 1.0 ml/min, a mobile phase containing a mixture of 0.01N ammonium acetate buffer (pH 3) and acetonitrile (65:35, v/v) was passed over the column. The column temperature was set at 30°C. A photodiode array detector was used at the wavelength of 257 nm. **Results:** Retention times of cabotegravir and rilpivirine were found to be 2.250 min and 2.823 min, respectively. The calibration curves were linear over the concentration range of 10-60 µg/ml and 15-90 µg/ml for cabotegravir and rilpivirine, respectively with a correlation coefficient (R^2) of 0.999. The percent relative standard deviation (% RSD) for precision and robustness studies was found to be < 2%. The mean % recovery was obtained as 100.71 % and 100.01 % for cabotegravir and rilpivirine, respectively. The degradation during stability studies was more in the presence of oxidative conditions. **Conclusion:** The developed method was found to be simple, rapid, and economical and can be applied successfully for simultaneous estimation of cabotegravir and rilpivirine in regular analysis.

Keywords: Cabotegravir, Rilpivirine, RP-HPLC, Method Validation, Stability studies.

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Received: 25-08-2022;
Revised: 18-01-2023;
Accepted: 01-04-2023.

INTRODUCTION

Cabotegravir, chemically known as (3S,11aR)-N-((2,4-difluorophenyl)methyl)-6-hydroxy-3-methyl-5,7-dioxo-2,3,5,7,11,11a-hexahydrooxazolo(3,2-a)pyrido(1,2-d) pyrazine-8-carboxamide (Figure 1a) is a- second-generation integrase inhibitor, used for HIV treatment.[1] Rilpivirine, chemically designated as 4-{[4-({4-[(E)-2-cyanovinyl]-2,6-dimethylphenyl}amino)pyrimidin-2-yl]amino}benzonitrile (Figure 1b), belongs to the category of Anti-HIV drug.[2] Cabotegravir blocks the strand transfer of viral DNA and thereby inhibits the replication, whereas rilpivirine also hinders the viral replication but as a non-nucleoside reverse transcriptase inhibitor.[3]

Literature review reveals that till now there is only one Reverse Phase High Performance Liquid Chromatography (RP-HPLC) method reported for simultaneous estimation of cabotegravir and rilpivirine with stability studies.[4] However, the reported method has lower sensitivity and is less economical. The other method reported, used Reverse Phase Ultra-Performance Liquid Chromatography (RP-UPLC) for simultaneous estimation of cabotegravir and rilpivirine, however, not performed the forced degradation studies.[5] There are three HPLC methods reported for simultaneous estimation of rilpivirine and dolutegravir.[6-8]

The proposed HPLC method in comparison to the reported HPLC method is summarized in Table 1. It shows that the proposed method is more sensitive and economical than the reported method.[4]

MATERIALS AND METHODS

Chemicals

HPLC grade water and acetonitrile were purchased from Merck Pvt. Ltd., Mumbai. Ammonium acetate and acetic acid of analytical grade were also procured from Merck Pvt. Ltd., Mumbai. The working standards of cabotegravir and rilpivirine were provided as a gift sample from Spectrum Pharma Research Pvt. Ltd., Hyderabad.

DOI: 10.5530/ijper.57.3s.87

In vitro anthelmintic activity of Passiflora foetida L. hydroalcoholic and ethyl acetate extracts

Article · June 2023

DOI 10.54085/ap.2023.12.1.99

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Annals of Phytomedicine 12(1): 628-631, 2023

DOI: http://dx.doi.org/10.54085/ap.2023.12.1.107

Annals of Phytomedicine: An International Journal

http://www.ukaazpublications.com/publications/index.php

Print ISSN : 2278-9839 Online ISSN : 2393-9885

Original Article : Open Access

UV spectrophotometric method development and validation for the determination of metoprolol succinate in bulk and its pharmaceutical dosage form

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Article Info

Article history
Received 27 May 2023
Revised 27 June 2023
Accepted 28 June 2023
Published Online 30 June-2023

Keywords
UV spectrophotometry
Metoprolol succinate
Methanol
Validation
ICH

Abstract

A simple, economical determination of metoprolol succinate based on the UV spectrophotometric with methanol reagent. The maximum absorbance intensity of metoprolol succinate was found to be 275 nm. The achieved linearity over the concentration range with a good correlation coefficient (R^2), as well as the limit of detection (LOD) and limit of quantification (LOQ), which were obtained as 0.098 µg/ml and 0.297 µg/ml, respectively. As per International Conference on Harmonization (ICH) guidelines, all parameters have been calculated. The spectrophotometric method determination is successfully applicable to pharmaceutical dosage formulations. In the laboratories quality control test can be done. Since it is economical, perceptive and clear.

1. Introduction

It is possible to treat hypertension and lower blood pressure with beta-adrenergic blockers, such as the extended-release tablets of metoprolol succinate. Bringing down blood pressure reduces the risk of both fatal and non-fatal cardiovascular events, particularly strokes and myocardial infarctions. Its chemical name is 1-(isopropyl amino)-3-[p-(2-methoxyethyl) phenoxy] succinate of -2-propanol (Moreshwar and Rajeshwar, 2009). Metoprolol works by lessening the agonist effect that catecholamines have on the heart (Pagar *et al.* 2013). As a result of the medication's high sensitivity, even a tiny dose can effectively block beta-adrenergic receptors. The medication also has benefits that are cardioprotective, insulin resistance-improving, cerebroprotective, and anti-atherosclerotic, as well as reno protective properties (such as lowering proteinuria *via* dilatation efferent arterioles). Azelnidipine has two enantiomers because the 1, 4-dihydropyridine ring has an asymmetric carbon at position four. Azelnidipine has two enantiomers because the 1, 4-dihydropyridine ring has an asymmetric carbon at position four (Dhruvin *et al.*, 2022).

A survey of literature revealed that two UV spectrophotometric methods (Moreshwar and Rajeshwar, 2009; Pagar *et al.*, 2013) were reported for the estimation of metoprolol in its pharmaceutical dosage form. There were few UV spectrophotometric (Ekta Patel *et al.* 2016; Tushar *et al.*, 2014), RP-HPLC (Mihir *et al.*, 2012; Patel *et al.*, 2019) and HPTLC (Mital *et al.*, 2012) methods have been developed for simultaneous estimation of metoprolol succinate with other drug combination. For the purpose of determining the presence of metoprolol succinate in bulk samples; a accurate, affordable, and sensitive spectrophotometric approach has been devised and is described in the current paper.

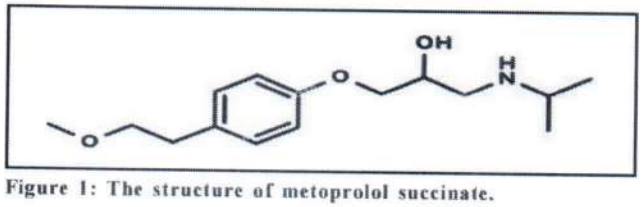

Figure 1: The structure of metoprolol succinate.

2. Materials and Methods

2.1 Instruments

The study was performed using a Shimadzu UV-visible spectropho tometer (UV-1800 series), which features a double beam and double detector arrangement with a 1 cm matched cell. The mobile phase was degassed using an ultrasonicate cleaner. Electronic balance (Sansui Vibra DJ -150S-S) was used for the weighing.

2.2 Materials

Indian company Yarrow Chemicals Private Limited supplied the metoprolol succinate standard medication. All of the chemical and reagent materials of analytical grade were purchased. Calibrated glassware was used all throughout the analysis.

2.3 Selection of suitable solvent

Based on solubility property, methanol is selected for proper dissolving of metoprolol succinate.

2.4 Standard stock solution preparation

20 mg of metoprolol succinate that had been precisely measured was transferred to a 10 ml volumetric flask and then dissolved in methanol. To get the necessary final concentration of 2000 µg/ml, the final volume was then modified using the same amount of methanol.

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Annals of Phytomedicine 12(1): 589-594, 2023

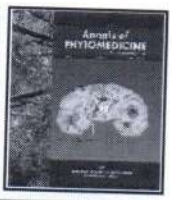
DOI: http://dx.doi.org/10.54085/ap.2023.12.1.60

Annals of Phytomedicine: An International Journal

http://www.ukaazpublications.com/publications/index.php

Print ISSN : 2278-9839

Online ISSN : 2393-9885



Original Article : Open Access

UV spectrophotometric method development and validation for estimation of furosemide in the bulk and tablets dosage form

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Article Info

Article history

Received 4 April 2023

Revised 23 May 2023

Accepted 24 May 2023

Published Online 30 June-2023

Keywords

UV spectrophotometry

Furosemide

Method development

0.1N NaOH

Method validation

ICH guidelines.

Abstract

For the determination of furosemide in the bulk and its tablet dosage form, a simple, rapid, precise, and accurate UV spectrophotometric method was developed and validated. The maximum absorbance (λmax) of furosemide with this method can be observed at 229 nm. In accordance with ICH (International Conference on Harmonisation) standards, the method was validated. With a correlation coefficient (R^2) of 0.999, the drug followed linearity in the concentration range of 1-6 µg/ml. The accuracy of the proposed method was assessed by applying the standard addition technique where the mean % recovery was found in the range between 99.24% to 99.83%. The LOD and LOQ were found to be 0.14 µg/ml and 0.43 µg/ml, respectively. Since the proposed method is accurate, sensitive and affordable, it can be used for routine analysis of furosemide in bulk and tablet dosage form in quality control testing laboratories.

1. Introduction

Furosemide belongs to a group of medicines called loop diuretics also known as water pills and it is used to reduce the swelling (edema) caused by too much water in the body in people who have heart failure, liver or kidney disease (Spinosa Bosch *et al.*, 2008). The chemical name of furosemide is 4-chloro-2-[(furan-2-methyl)amino]-5-sulfamoyl benzoic acid (Supriya *et al.*, 2018) The main mechanism of action of furosemide is blocking of sodium-chloride co-transport system in the kidney tubules and the loop of henle, which normally reabsorb water and electrolytes from the urine (Shailesh and Mitesh, 2017).

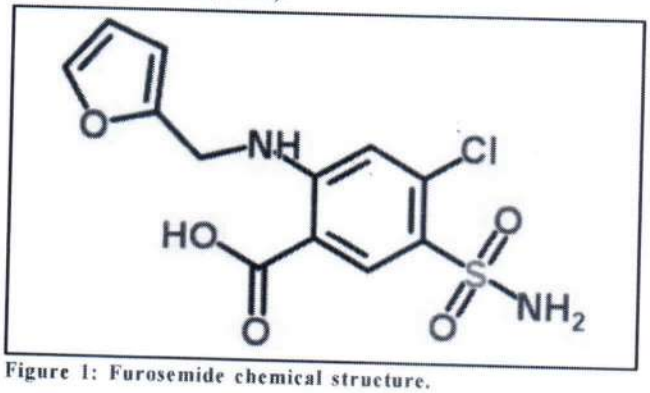

Figure 1: Furosemide chemical structure.

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Literature review revealed that there were several UV spectrophotometric methods reported for the estimation of furosemide in bulk and tablet dosage form (Gahandule and Banerjee, 2016.; Rahman Ahmed, 2020.; Supriya, Patel and Dhobale, 2018). In addition that separate UV spectrophotometry method was reported for the forced degradation study for furosemide without validation (Rohankumar *et al.*, 2019). There is one UV spectrophotometric (Patel and Sagar, 2012) and two HPLC methods (Rohankumar *et al.*, 2018.; Vijay Ram *et al.*, 2012) reported for the estimation of furosemide with spironolactone combination.

For optimization of the method, several trials were performed with different solvents such as chloroform, 0.1 N hydrochloric acid, methanol, acetone and 0.1 N sodium hydroxide and the drug was found to be insoluble in chloroform, hydrochloric acid, acetone and soluble in methanol (after sonicated for 10 min), 0.1 N sodium hydroxide solution. Finally, 0.1 N sodium hydroxide was found to be most suitable among the all solvents and absorption maxima with that solution was found at 229 nm.

2. Materials and Methods

2.1 Instruments

A UV-Visible spectrophotometer (Labindia) and UV-matched quartz cells (1 cm) were used for the measuring of λmax of the resultant solution of furosemide in the bulk and its pharmaceutical dosage form. An electronic weighing balance and a sonicator were used in this study.

2.2 Materials

A pure standard drug of furosemide was procured from Yarrow Chemicals Private Limited, India. Tablets of furosemide 40 mg (Lasix)

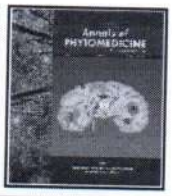
Annals of Phytomedicine 12(1): 565-572, 2023

DOI: http://dx.doi.org/10.54085/ap.2023.12.1.43

Annals of Phytomedicine: An International Journal

http://www.ukaazpublications.com/publications/index.php

Print ISSN : 2278-9839 Online ISSN : 2393-9885



Original Article : Open Access

UV spectrophotometric stability indicating method development and validation for the estimation of 5-fluorouracil in the bulk

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Article Info

Article history
Received 5 March 2023
Revised 20 April 2023
Accepted 21 April 2023
Published Online 30 June-2023

Keywords
5-Fluorouracil
UV spectrophotometry
Method development
Validation
ICH guidelines

Abstract

For the determination of the 5-fluorouracil in the bulk, a simple, accurate, precise, stability-indicating UV spectrophotometric approach has been established. For determination of 5-fluorouracil HPLC grade water used as a solvent and shows maximum absorbance at 265 nm. The developed approach completed validation for a variety of parameters, such as linearity, precision, accuracy, robustness, ruggedness, LOD, and LOQ. This method followed Beer's law for the concentration range of 4-14 µg/ml for 5-fluorouracil. The recovery testing showed that the suggested approach was accurate and per cent relative standard deviation (%RSD) confirmed this method was precise, robust. Forced degradation studies were performed under acidic, alkali, thermal and oxidative conditions as per ICH guidelines.

1. Introduction

In fact, 5-fluorouracil is the third most often used chemotherapy drug for treating solid tumors worldwide (Sara *et al.*, 2018).The chemical name of 5- fluorouracil is 5- fluro-1H,3H-pyrimidine-2,4-dione. 5-fluorouracil is used as a anticancer agent (Figure 1). Inhibition of thymidylate synthase and integration of its byproducts into RNA and DNA are the primary mechanisms of action of 5-fluorouracil (Longley *et al.*, 2003). The 5-fluorouracil is being used as an antimetabolic in the topical treatment of various skin diseases with emphasis on skin cancer, vitiligo and psoriasis. Tegafur [5-fluoro-1-(2-tetrahydrofuryl)-2,4(1H,3H)-pyrimidinedione] is a prodrug of 5-fluorouracil (5-FU) and it is converted into 5-FU by cytochrome P450 enzymes (Yamamiya *et al.*, 2013). The principal contaminants 5-FU and N-1(2-furanidyl) uracil must be identified for the quality control of tegafur raw materials (Badea *et al.*, 2002).

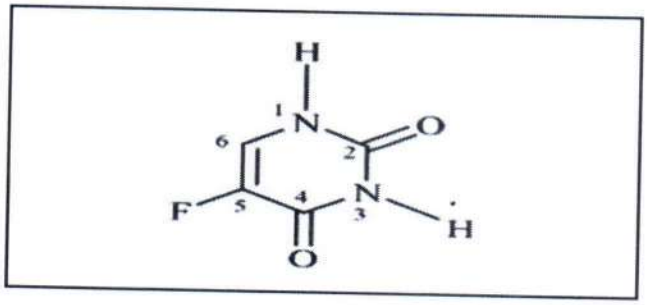

Figure 1: Chemical structure of 5-flourouracil.

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Literature review revealed that till now there was only one UV spectrophotometric method was reported for determination of 5-fluorouracil (Ileana *et al.*, 2012). In comparison to the reported method, the proposed UV spectroscopic method was shown to be more cost-effective and sensitive.

2. Materials and Methods

2.1 Instruments

A UV/Visible spectrophotometer (Labindia) and 1cm UV matched quartz cells were used for the validation of 5-fluororacil in the bulk.

2.2 Materials (Shwetha *et al.*, 2020)

5-fluorouracil standard drug was purchased from Yarrow Chemicals Private Limited, India. The analytical grade chemicals and reagents that were used were all procured. Throughout the work, calibrated glassware was utilised.

2.3 Selection of suitable solvent (Sai Krupa Raj *et al.*, 2022)

About 20 mg of 5-fluorouracil were weighed, and the solubility of the drug in water, 0.1 N NaOH, dimethylformamide (DMF), and HPLC grade water was examined. The drug was found to be soluble in HPLC grade water by sonication for 5 min. It was selected throughout study because of obtaining sharp peak at the selected wavelength.

2.4 Standard stock solution preparation

20 mg of 5-fluorouracil weighed accurately, was then transferred to a 50 ml volumetric flask and dissolved in HPLC grade water using a sonicator for up to five minutes. Then final volume was adjusted with the same HPLC grade water to get final concentration of 400 µg/ml. From the above concentration, pipette out 5 ml of solution