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RESEARCH PAPERS PUBLISHED BY THE FACULTIES

ASSESSMENT YEAR:2019-20

S.No.	Main author and others	Title of the research article	Journal and ISSN no.	Volume and Page no.	Year
1.	D. V. Devi , **D. Swarnalatha** and G. V. S. Reddy	Chemometric approach for RP-HPLC determination of dronedarone using response surface methodology	International journal of pharmaceutical sciences and research& ISSN (Online): 0975-8232,ISSN (Print): 2320-5148	11(1).255-63	2020
2.	Guduru Rajeswari, **Swarnalatha** D, Chandra Sekhar K	Phytochemical screening of ethanolic extract of whole plant of sida glutinosa	Asian Journal of Pharmeutical and Clinical Research &ISSN 2455-3891	13(4): 65-74	2020
3.	**Bommala Nirmala Devi**, S. Salma, V. Lavanya	Phytochemical Evaluation and In vitro Antidiabetic Activity of Ethanolic Extract of *Viscum articulatum*	International Journal of Pharmaceutical Sciences Review and Research & eISSN: 0976-044X	60(1); 99-104	2020
4.	MedaVenkatasubbaiah, **P. Dwarakanadha Reddy**, Suggala V. Satyanarayana	Literature-based review of the drugs used for the treatment of COVID-19	Current medicine research and practice & ISSN: 2352-0817	10; 100-109	2020
5.	AdapaSatish Kumar, **P. Dwarakanadha Reddy**, S.V.	Phytochemical screening and in vitro antioxidant study of Magnolia	International Journal of Green Pharmacy & ISSN: 0973-	14 (1); 87-91	2020

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	Satyanarayana	vine, Muntingiacalabura, and Alangiumsalviifolium fruits	8258		
6.	Mallesh Kurakula, and **N. Raghavendra Naveen**	In Situ Gel Loaded with Chitosan-Coated Simvastatin Nanoparticles: Promising Delivery for Effeective Anti-Proliferative Activity against Tongue Carcinoma	Marine drugs & ISSN 1660-3397	18, 201;2-17	2020
7.	**N. Raghavendra Naveen** , Chakka Gopinath and Mallesh Kurakula	Okra-Thioglycolic Acid Conjugate—Synthesis, Characterization, and Evaluation as a Mucoadhesive Polymer	Processes & ISSN: 2227-9717	8, 316; 2-19	2020
8.	Yogi Eshwar P. Kumar, **Giri D. Rajasekhar**	A Study Of Prescription Auditing In Inpatient General Medicine In Tertiary Care Government Hospital	International Journal Of Research In Medical Sciences& PISSN 2320-6071 | eISSN 2320-6012	8(11):3979-3982	2020
9.	**Dornadula Giri Raja Sekhar**,Pamayyagari Kalpana	Case Report On Atypical Posterior Reversible Encephalopathy Syndrome (PRES) Associated With *Antepartum eclampsia*	Open Journal Of Clinical And Medical Case Reports& ISSN: 2379-1039	6(4); 1-3	2020

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RESEARCH PAPERS PUBLISHED BY THE FACULTIES

ASSESSMENT YEAR:2019-20

10.	Lakshmi Narasimha Gunturu, Kalpana Pamayyagari, **Giri Raja Sekhar Dornadula**	A Case Report On Herpes Zoster Eruption Associated With Chronic Obstructive Pulmonary Disease	International Journal Of Therapeutic Applications& ISSN 2320-138X	37; 13-14	2020
11.	**U. Narasimhulu , M. Madhu, C. Sireesha,** V. Vyshnavi and S. Rafi	Development And Validation Of UV-Spectroscopic Method For The Estimation Of Lymecycline In Capsule Dosage Form	International Journal Of Pharmaceutical Sciences And Research &E-ISSN: 0975-8232; P-ISSN: 2320-5148	11(4); 1749-1756.	2020
12.	**Susmitha.A, Gireesh Kumar. E**	Hydrotropy – A Solubility Enhancement Tool For The Estimation Of Cefdinir In Its Suspension Dosage Form By UV-Spectroscopy	International Journal Of Chemtech Research & ISSN: 0974-4290, ISSN (Online):2455-9555	13(1): 232-241	2020
13.	**Deepa Mopuri** , SadaqValli Syed and A. Madhulath	Docking, Synthesis And Biological Evaluation Of Novel Quinoline Containing Schiff Bases For Anti-Inflammatory And Anti-Oxidant Activities	International Journal Of Pharmaceutical Sciences And Research & E-ISSN: 0975-8232; P-ISSN: 2320-5148	11(2); 721-731	2020
14.	Venkatalakshmi V, **Prasanthi C**, [illegible]G	Development of validated stability indicating high performance liquid	Journal of Global Trends in Pharmaceutical	11 (1); 7453 - 7459	2020

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		chromatographic assay method for the simultaneous estimation of ivacaftor and tezacaftor in bulk and pharmaceutical dosage form by RP-HPLC	Sciences&ISSN-2230-7346		
15.	**M Nagendra**, SV Mani Deepika, D Ravi Shankar Babu, T Jyotshna and **Dr. D Swarnalatha**	In vitro anti-inflammatory activity of aqueous extract of *Pithecellobium dulce*	Journal of Pharmacognosy and Phytochemistry& E-ISSN: 2278-4136, P-ISSN: 2349-8234	8(5), 200-201	2019
16.	**Anitha P, Ramkanth S.** Satyanarayana S V	Development and validation of a new analytical RP-HPLC method for simultaneous determination of Glibenclamide and Atenolol in bulk	International Journal of Research in Pharmaceutical Sciences & ISSN: 0975-7538	10(3); 2433-2445	2019
17.	G. Lakshmi Narasimha, **Giri Raja Sekhar Dornadula**	A Case Report On Pleural Effusion Induced By Pulmonary Tuberculosis Reactivation	International Journal Of Science And Research & ISSN: 2319-7064	8 (8), 1310 - 1311	2019
18.	Shaik Sajida, **Byreni Vinuthna**, Chakka Gopinath,	Evaluation of rational use of antibiotics and incidence of surgical site infections in a tertiary care	Research & Reviews: Journal Of Surgery& eISSN: 2319-3425	7(3), 4–8	2019

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		hospital			
19.	C. Sumanjali, R. Manohar, M. Syamala, S.S. Sheeba1, **T. Jyothsana**	Cardioprotective effect of pulicaria wightania against isoproterenol induced myocardial infarction in experimental rats	International Journal of Research in Phytochemical and Pharmacological Sciences& ISSN: 2582-1997	1(1), 12-19	2019
20.	**Adinarayana K**, Ramamohan Reddy K , NagendraRaju R, Karun Babu K,,Amrutha K	Comparative studies on in vitro antioxidant and antimicrobial Activities of sesbania sesban seeds and tephrosia calophylla Leaves	Journal of Global Trends in Pharmaceutical Sciences&ISSN-2230-7346	10(4): 6887 - 6893	2019
21.	**M.Praveen Kumar, V.Chinnikrishnaiah, D.Swarnalatha**	Formulations and evaluation of fast dissolving tablets of risperidone	Journal of Pharmaceutical and biological research& ISSN 2347-8330	7(2);31-36	2019
22.	**Simham Sudhakar**, S. Pranush Kumar, V. Sreenivasulu	Evaluation of Invitro Antiurolithiatic Activity of Naringin	Journal of Pharmacy and Chemistry & ISSN 0973-9874	14(1); 34-38	2019
23.	**Tukivakam Anusha**, Thalari Anil Kumar	Review on Novel Drugs for Gout	International Journal of Pharmaceutical Sciences Review and Research& ISSN 0976 – 044X	58(2),16; 112-116	2019

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24.	**Dr. M. Pramod Kumar,** D. Prathibha, G. Ravi Teja, K. Keerthana	Assessment of Medication Errors in Tertiary Care Hospital	International Journal of Pharmaceutical Sciences Review and Research &ISSN 0976 – 044X	61(1),1; 1-8	2019
25.	Dasari Vasavi devi, **Dugasani Swarnalatha,** Gopireddy Venkata Subbareddy	Optimization of RP-HPLC Method For Simultaneous Estimation of Dolutegravir And Rilpivirine In Binary Mixture By Using Design Of Experiments	Journal of Global Trends in Pharmaceutical Sciences& ISSN-2230-7346	10(2): 6298 – 6310	2019
26.	M. Yaswanth, **M. Deepa, Pramod. N**, Somashekar. B	In–Silico design, synthesis, characterization and biological evaluation of novel 2-azetidinone derivatives for anti–Leukemic activity	Journal of Peer Scientist & eISSN 2581-7221	2(1): e1000009.	2020
27.	**V. Chinni krishnaiah, M. Praveen kumar, D. Swarnalatha**	Assesment of In-Vitro Antioxidant and Anti Inflammatory activity of ethanolic extract of *Colocasia esculenta*	International Journal of Chemistry and Pharmaceutical Sciences & ISSN: 2321-3132	7(12): 189–194	2019

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CHEMOMETRIC APPROACH FOR RP-HPLC DETERMINATION OF DRONEDARONE USING RESPONSE SURFACE METHODOLOGY

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Keywords:

RP-HPLC,
Design of experiments,
Central composite design,
Dronedarone

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ABSTRACT: The present study depicts the assessment of class III antiarrhythmic drug dronedarone in its drug substance and drug product. Response surface randomized central composite quadratic design has been employed for the optimization of method parameters using reverse-phase high-performance liquid chromatography (RP-HPLC) on Kromasil C18 250 × 4.6 mm, 5µ with UV detection at 289 nm. The ranges of the independent variables used for the optimization were flow rate 0.9 to 1.1, column temperature 28 °C to 33 °C and composition of buffer in the mobile phase is 55 to 65%. The influence of these independent variables on the output responses: retention time, asymmetric factor, theoretical plates, plate height and capacity factor were evaluated. The five responses were simultaneous optimized by using central composite design. Optimum conditions chosen for the assay were flow rate of 0.945 ml/min, temperature 31.3 °C and buffer: Acetonitrile has taken in the ratio 61.93: 38.07 respectively. The retention time of dronedarone is 2.356 minutes with the employment of the optimum conditions given by the design experiments. All the system suitability parameters were satisfied. Further the method has been validated by the regulatory guidelines framed by the ICH. The method was found linear in the concentration range of 25-150 µg/mL with a regression coefficient of 0.999. The limit of detection and limit of quantification were found to be 0.58 µg/mL and 1.75 µg/mL respectively. The method was found to be simple, linear, accurate, precise and robust. Therefore, it can be used for routine quality control of dronedarone in its tablet dosage form.

INTRODUCTION: Dronedarone is a class III antiarrhythmic drug recently approved by the US FDA in 2009 for the treatment of nonpermanent atrial fibrillation and atrial flutter [1].

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The chemical name is N- [2- butyl- 3[4- [3-(dibutylamino) propoxy] benzoyl]- 1-benzofuran-5-yl] methanesulfonamide hydrochloride according to IUPAC. Its molecular formulae are $C_{31}H_{44}N_2O_5S.HCl$ with molecular weight of 593.22 g/mol [2].

Chemically, it is a benzofuran derivative containing a heterocyclic compound which is a structural analog of Amidarone. DRO reduces the toxic effects in Amidarone by replacing the iodine group with a methane sulfonyl group due to reduced lipophilicity, it has lower toxicity and superior

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Research Article

PHYTOCHEMICAL SCREENING OF ETHANOLIC EXTRACT OF WHOLE PLANT OF *SIDA GLUTINOSA*

2019-20

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ABSTRACT

Objective: The aim of the present study is to screen for the phytochemical constituents which are of pharmacological importance present in the ethanolic extract of whole plant of *Sida glutinosa* (SG).

Methods: The ethanolic extract of the dried whole plant of SG is subjected to preliminary phytochemical screening which showed the presence of major phytoconstituents such as phenols, flavonoids, and alkaloids. The extract was screened for its antioxidant activity by 2,2-diphenyl-1-picrylhydrazyl, hydroxyl radical, Iron (III) to Iron (II) reducing activity, and nitric oxide scavenging assay. Further, the ethanolic extract was subjected to fingerprinting technique high-pressure thin-layer chromatography (HPTLC). Reverse phase high-pressure liquid chromatography (Rp-HPLC) was performed to estimate the amount of total phenolics, flavonoids, and alkaloids quantitatively in isocratic mode.

Results: Phytochemical screening of the ethanolic extract of the plant showed the presence of pharmacologically important constituents such as alkaloids, flavonoids, phenolics, and terpenoids. The study also revealed the potential antioxidant activity of the extract with IC_{50} value. The extract fingerprinting through HPTLC revealed the presence of various phytoconstituents. Rp-HPLC showed 0.35±0.12 µg/ml of total phenolics, 0.0013±0.05µg/ml of alkaloids, and 0.00081±0.08 µg/ml of flavonoids.

Conclusion: Scientific evaluation of SG which has therapeutic significance was carried out which is an important concept for the standardization of the plant-based drug. Further, there is a need for isolation and characterization of the lead molecules their systemic evaluation for its pharmacological activities.

Keywords: *Sida glutinosa*, *In vitro* antioxidant, High-pressure thin-layer chromatography, Reverse phase high-pressure liquid chromatography.

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INTRODUCTION

Sida glutinosa (SG) belongs to Malvaceae family. It is an annual herb and is found extensively grown in the region of Eastern and Southern regions of India and also extended into the region between South East Asia and Burma. The aerial parts and the roots of the plant are used in the treatment of a wide variety of ailments such as tuberculosis and rheumatidis [1,2]. In spite of its wide usage as an herbal treatment, there is no extensive research on the phytochemical screening, which is very important for the standardization of the drug. The literature survey revealed that nine different phytocompound had been isolated and characterized, among which three were proved to be an effective antioxidant drug [3,4]. From the methanolic extract of aerial parts of the plant showed the presence of a glucoside which is flavonoid [3]. The compound glutinosterone was reported and the studies also showed its role in the modification of some important liver marker enzymes [5]. In spite of its pharmacological importance, pharmacognostic standardization is lacking and in, present condition, the drugs are getting resistant by the human system and there is always growing need for the new drug which can cure the challenging diseases. As plant-based compounds are safe and efficient, there is a growing demand for proper research in this area. Therefore, the study deals with the standardization of drug by qualitative and quantitative analysis of total phenolics, flavonoids, and alkaloids which are of biological importance by reverse phase high-pressure chromatography (Rp-HPLC) in the ethanol extract of SG which is not done till date.

METHODS

Chemicals and instrument

The dried whole plant material was extracted using ethanol of analytical grade. For antioxidant activity DPPH of sigma grade, naphthyl ethylene diamine dihydrochloride gifted, ascorbic acid from HiMedia, deoxyribose of sigma grade is used. DMSO of analytical grade, EDTA of Sd fines are used in the phytochemical screening. High-performance thin-layer chromatography (HPTLC), CAMAG, Switzerland, and software WinCATS 4 software are used. Supercon liquid chromatography-mass spectrometer was done by Shimadzu 2010A model. Fourier-transform infrared spectra were got from KBr discs and an instrument used Thermo Nicolet Id5, nuclear magnetic resonance (NMR), i.e., C-NMR and H-NMR by Bruker NMR with 500 MHz using TMS as internal standard. For column chromatography silica mesh size 60–120 Merck and Silica gel G, Merck for thin-layer chromatography (TLC) was used.

Collection of plant material

The fresh and healthy whole plant material of SG was collected from Eastern Ghats of Tirupati, Andhra Pradesh, India. The plant material was identified from Botany professor Mr. Madhavan Chetty and the specimen is preserved in the herbarium in the Department of Botany, SV University, Tirupati, with the herbarium number being 1035.

Preliminary phytochemical screening

Extractive value

Ethanolic soluble extractive value and water-soluble extractive value of air-dried coarse powder of plant material as SG are determined. The

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Research Article

Phytochemical Evaluation and *In vitro* Antidiabetic Activity of Ethanolic Extract of *Viscum articulatum*

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ABSTRACT

Natural products are the major mine for discovering promising lead candidates, which play an important role in future drug development programs. Ease of availability, least side effects and low cost make the herbal preparations are the main key player of all available therapies, especially in rural areas. Since centuries, many plants are considered a fundamental source of potent anti-diabetic drugs. *Viscum articulatum* is a herbal medicinal plant belonging to Family *Viscaceae*, and mentioned in Ayurveda, Siddha, and Chinese medicinal system for treatment of various disorders. The literature survey confirms that the anti-diabetic activity of *Viscum articulatum* has not been scientifically investigated. Hence, the present study is under taken for the in vitro anti-diabetic activity of the whole palnt of *Viscum articulatum* to evaluate its traditionally claimed anti-diabetic activity. The whole plant of *Viscum articulatum* which belongs to family viscaceae have been investigated in a systemic way covering extraction, qualitative phytochemical analysis, invitro anti-diabetic activity. The powdered material (100 gm) was subjected to solvent extraction in soxhlet apparatus with ethanol as solvent. The colour of ethanolic extract was green and its yield is 7. 1gm. The ethanolic extract of *Viscum articulatum* was subjected for the preliminary phytochemical analysis and found for the presence of flavonoids, steroids, alkaloids, terpenoids. The anti-diabetic activity of ethanolic extract of the plant was done by alpha amylase inhibitory method and IC_{50} value of extract was found to be 53.79. From the results it was observed that the ethanolic extract of *Viscum articulatum* is moderately suitable for the control diabetic conditions.

Keywords: *Viscum articulatum*, anti-diabetic activity, IC50, alpha amylase inhibitory method, Herbal products.

INTRODUCTION

A medicinal plant is any plant in which one or more of its organs contains substances that can be used for therapeutic purpose or which are precursors for the synthesis of useful drugs. Medicinal plants have always been considered a healthy source of life for all people. Therapeutically properties of medical plants are very useful in healing various diseases and the advantage of these medicinal plants is being 100% natural [1]. Herbal products are often perceived as safe because they are "natural". In India, in recent years, there is increased research on traditional ayurvedic herbal medicines on the basis of their known effectiveness in the treatment of ailments for which they have been traditionally applied. Considerable efforts have been directed towards the discovery and development of natural products from various plant and animal sources which have antiplatelet, anticoagulant, antithrombotic, and thrombolytic activities etc.

The term diabetes is the shortened version of the full name diabetes mellitus. Diabetes mellitus is derived from the Greek word diabetes meaning siphon- to pass through and the Latin word mellitus meaning honeyed or sweet. This is because in diabetes excess sugar is found in blood as well as the urine. It was known in the 17th century as the "pissing evil". The term diabetes was probably coined by Apollonius of Memphis around 250 B.C [2-3]. In 1910, Sir Edward Albert Sharpey-Schafer suggested that people with diabetes were deficient in a single chemical that was normally produced by pancreas – he proposed called this substance 'insulin', from the Latin Insula, meaning Island, in reference to the insulin- producing islets of Langerhans in the pancreas [4-6].

Natural products are the major mine for discovering promising lead candidates, which play an important role in future drug development programs. Ease of availability, least side effects and low cost make the herbal preparations are the main key player of all available therapies, especially in rural areas [7-9]. Since centuries, many plants are considered a fundamental source of potent anti-diabetic drugs. Although, synthetic oral hypoglycemic together with insulin are the main route for controlling diabetes. However, they exhibited prominent side effects and failed to reverse the course of its complications. This constitutes the major force for finding alternatives, mainly from plant kingdom that are of less severe or even no side effects [11,12].

Viscum articulatum is an herbal medicinal plant belonging to Family *Viscaceae*, and mentioned in Ayurveda, Siddha, and Chinese medicinal system for treatment of various disorders. It has many medicinal values and used traditionally and ethnobotanical for the treatment of rheumatism arthritis, bone fracture, cuts, wound healing, fever, fatigue, liver diseases, epilepsy, blood diseases, etc. The literature survey confirms that the anti-diabetic activity of *Viscum articulatum* has not been scientifically

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Review Article

Literature-based review of the drugs used for the treatment of COVID-19

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ABSTRACT

COVID-19 is primarily a respiratory disease caused by a newly discovered SARS-CoV-2 virus and identified in the city of Wuhan, China in December 2019. WHO has declared this disease as a pandemic, and warned other countries. Presently this has affected 216 countries, areas or territories worldwide, spreading of this disease is very fast in USA, Brazil, and Russia than in the country of its origin, China. Like other coronaviruses, this may develop respiratory tract infections in the patients range from mild to fatal illness like pneumonia and acute respiratory distress syndrome (ARDS). As of now, no effective drug, vaccine, or any procedure is available and experiments are underway. However, empirical therapy is being followed to manage and save the lives of the patients. There is a need for pharmacological alternatives to combat this deadly virus and its complications. Based on the previous experiences with similar coronavirus management and present preliminary data from uncontrolled studies, drugs like chloroquine, hydroxychloroquine, remdesivir, lopinavir/ritonavir, and favipiravir have been recommended by the researchers to manage COVID-19. This review had assessed the potential mechanisms, safety profile, availability and cost of these drugs. This review concludes that the drugs mentioned above are having different properties and act differently in combating the COVID-19 viruses. Instead of single drug, combination of antivirals with different mechanism of action may be more effective and at the same time their adverse events should not be underestimated.

1. Introduction

COVID-19, previously known as 2019 Novel Coronavirus (2019-nCoV) respiratory disease caused by a newly discovered coronavirus, SARS-CoV-2 virus and identified in the city of Wuhan, Hubei province, China in December 2019. World Health Organization (WHO) declared the official name as COVID-19 in February 2020.[1,2] Virus isolated from the COVID-19 patients belongs to the genus betacoronavirus, this group of viruses can cause simple/common cold to severe acute respiratory syndrome (SARS) caused by SARS-CoV was identified in 2002, and another syndrome Middle East respiratory syndrome (MERS), caused by MERS-CoV identified in 2012.[3–6] According to the report of the WHO and China Joint Mission on Coronavirus Disease 2019 (COVID-19), it is a zoonotic virus, based on the data available, bats seems to be the reservoir of COVID-19 virus.[7]

1.1. Epidemiology

On 11 March 2020, WHO declared this disease as a pandemic, based on its spread to 118,000 cases in 114 countries, and 4291 deaths on that date and warned other countries about its seriousness.[8] According to the WHO COVID-19 dashboard globally, as of 9:20am CEST, 26 May 2020, 5,370,375 confirmed cases of COVID-19, including 3,44,454 deaths, have been reported to WHO from 216 countries, areas or territories. Its spread and mortality is more in the United States of America with 16,18,757 Confirmed cases and 96,909 deaths, followed by Brazil: 3,63,211 cases and 22,666 deaths; Russian Federation: 3,53,427 cases and 3633 deaths; The United Kingdom: 2,59,563 cases and 36,793 deaths; Spain: 235,772 cases and 28,752 deaths; Italy: 229,858 cases and 32,785 deaths; Germany: 178,570 cases and 8257 deaths; Turkey:

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ORIGINAL ARTICLE

Phytochemical screening and *in vitro* antioxidant study of *Magnolia vine*, *Muntingia calabura*, and *Alangium salviifolium* fruits

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Abstract

Objective: This study was undertaken to investigate the antioxidant activity of methanolic extract of *Schisandra* (magnolia vine) (MEMV), *Muntingia calabura* (MEMC), *and Alangium salviifolium* (MEAS) *fruits*. **Materials and Methods:** Rindless fruits were subjected to treatment with pure methanol in a sufficient quantity at room temperature for a period of one week with intermittent shaking. The resultant extract then underwent double filtration, first through a cotton plug and then through Whatman filters paper No. 1. Evaporation under reduced pressure was carried out on the filtrate to get a dark green viscous mass which was stored till use at 4°C. Hydroxyl radical (OH) scavenging activity determination of reducing power, lipid peroxidation induced by carbon tetrachloride, and inhibitory test on protein oxidative modification were carried out for evaluation of the antioxidant activity of MEMV, MEMC, and MEAS fruits generated methanolic extract. **Results:** The inhibitory ratio of MEMV, MEMC, and MEAS on albumin oxidative modification was as high as 78.94 at a concentration of 1000µg/ml that showed an increasing proportionality trend with concentration. The reducing power of MEMV, MEMC, and MEAS increased with increasing concentration of MEMV, MEMC, and MEAS. **Conclusion:** All the tested concentrations of MEMV, MEMC, and MEAS showed significant ($P < 0.001$) activity than control, the MEMV, MEMC, and MEAS (at all tested doses 100 µg, 200 µg, and 300 µg) significantly ($P < 0.001$) showed scavenging activity on OHs, which were generated by the ethylenediaminetetraacetic acid/H_2O_2 system, in comparison to control. A similar increase in percent scavenging of OH radicals by MEMV, MEMC, and MEAS was observed with an increase in dose.

Key words: *Alangium salviifolium*, antioxidant activity, *Magnolia vine*, *Muntingia calabura*

INTRODUCTION

Substantial evidence implicating the involvement of free radicals in metabolic syndrome development has been published.[1] Diseases such as liver cirrhosis, diabetes, and nephrotoxicity have been reported to have free radicals effect either in their development or progression.[2] These are unavoidable by-products of redox reactions occurring in the biological systems along with certain derivatives of oxygen[3] Nitric oxide, hydroxyl radical (OH), and superoxide anions all of which are reactive oxygen species cause enzyme inactivation resulting in significant cellular components damaged by covalent binding and lipid peroxidation ultimately injuring the tissue.[3] During this process, fibrosis and synthesis of collagen are augmented. All the stress conditions have an implication of enhanced oxygen derivatives toxic in nature as a common feature. To combat this hurdle, ample mechanisms consisting generation of antioxidants and enzymes have been gradually developed in the biological systems of plants and animals.

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marine drugs

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Article

In Situ Gel Loaded with Chitosan-Coated Simvastatin Nanoparticles: Promising Delivery for Effective Anti-Proliferative Activity against Tongue Carcinoma

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Abstract: The goal of this study is to develop optimized chitosan-coated Simvastatin (SIM) nanoparticles (NPs) loaded in an in situ gel (ISG) formulation via a face-centered central composite design (FCCCD). Coated SIM-NPs were doped with Quercetin (QRC) using a modified nanoprecipitation method. The concentrations of poloxamer 188 (A) and chitosan (B) at five different levels, plus/minus alpha (+1.414 and −1.414: axial points), plus/minus 1 (factorial points) and the center point were optimized for particle size (PS-Y1), entrapment efficacy (EE-Y2) and stability index (SI-Y3). Based on the desirability approach, a formulation containing poloxamer 188 0.24% and chitosan 0.43% renders the prerequisites of optimum formulation for preparing SIM–QRC NP-loaded ISG. Scanning microscopy showed spherical SIM-NPs, indicating monodispersity in the range of 0.50 ± 0.04 nm with a charge of +32.42 mV. The optimized formulation indicated the highest EE 79.67% and better stability at 4 °C. Drug release from SIM–QRC NP-loaded ISG was slower to plateau by up to 96 h and, at the end of 168 h, only 65.12% of SIM was released in a more controlled manner in comparison to SIM–QRC NPs and plain SIM. ISG formulation showed a considerable increase in apoptosis occurrence through caspase-3 mediation and it also enhanced the tumor suppressor protein levels. Enhanced biological activity of SIM was observed due to QRC enabling promising drug and polymer synergistic interaction. The proposed formulation can provide a breakthrough in localized therapy, overcoming the potential drawbacks of systemic chemotherapy for tongue carcinoma.

Keywords: simvastatin; chitosan; quercetin; face-centered central composite design; in situ gel; tongue carcinoma

1. Introduction

Oral cancers are the eighth most common cancers in the world, primarily located in the mouth, tongue or oropharynx [1]. The tongue is the most common site and oral squamous cell carcinoma (OSCC) represents 90%–95% of total intraoral carcinoma malignancies [2]. These arise initially from the lining of the tongue and appear like lumps with red or white spots. Although the exact etiology of tongue cancer is unknown, several risk factors like chewing tobacco, pan, and betel nuts have been identified, but these factors vary in different areas of the world [3–5]. The incidence of OSCC is rising in most of central and eastern Europe and the USA and the survival rate is just 30% [6–8].

processes

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Article

Okra-Thioglycolic Acid Conjugate—Synthesis, Characterization, and Evaluation as a Mucoadhesive Polymer

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Abstract: The success of mucoadhesive drug delivery systems relies on the type of polymer used, which becomes adhesive naturally upon hydration. Intended polymers should be able to maintain prolonged contact with biological membranes, and to protect or cater the drug to a prolonged period. Most of the hydro polymers form weak non-covalent bonds, that hinder localization of dosage forms at specific sites resulting in therapeutic inefficiency. This can be overcome by the thiol functionalization of natural polymers. In the present study, natural okra gum (OG) was extracted, followed by thiolation (TOG) and evaluated for mucoadhesion property and its role in enhancing the efficacy of repaglinide as a model drug (short-acting Type II antidiabetic drug). The thiol functionalization of OG (TOG) was confirmed by a Fourier-transform infrared spectroscopy (FTIR) study that showed a polyhedral to a spherical shape that had a rougher surface. Differential scanning calorimetry (DSC) and X-Ray Diffraction (XRD) studies of TOG indicated a decline in endothermic transition temperature and high crystallinity, respectively, in comparison to OG. CSFR (Crushing Strength: Friability Ratio), weight and thickness variations of repaglinidetablets formulated using TOG were >80% and <2.5% respectively. The highest swelling index (107.89 ± 1.99%) and strong mucoadhesion due to high disulfide bonds were observed for repaglinide TOG tablets in comparison to RG OG tablets. In-vitro release studies indicated a controlled drug release from thiolated formulations proportional to the concentration of thiomers that have a good correlation with in-vivo studies. Pharmacokinetic studies indicated higher AUC (area under the curve), longer $t_{1/2}$ with thiomers. and Level A IVIV (in vitro in vivo) correlation was established from the bioavailability and dissolution data. Consequently, all the obtained results suggest that thiomers based formulations can be promising drug delivery systems, even in targeting onerous mucosal surfaces like nasal, ocular or vaginal.

Keywords: okra gum; thiolation; mucoadhesion; repaglinide; pharmacokinetics

1. Introduction

The utilization of plant-based gums and mucilage turns out to be imperative as a pharmaceutical excipient, especially in designing a control drug delivery system [1]. The physicochemical properties of these materials can be easily altered to meet the requests of ideal drug delivery systems [2]. *Abelmoschus esculentus* (L.) Moench, known as "Okra", belonging to the mallow family is cultivated extensively throughout the tropical and subtropical regions of the world [3]. The okra gum (OG) is an acidic polysaccharide, comprising of glucuronic acid, rhamnose and galactose [4,5]. OG has been used in formulating mucoadhesive beads [6], buccal patches [7] and other controlled drug delivery matrices [8]. OG beads good mucoadhesion property, but there is a need to enhance mucoadhesion potential

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Original Research Article

A study of prescription auditing in inpatient general medicine in tertiary care government hospital

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ABSTRACT

Background: Irrational prescribing is a global problem. Prescription auditing can help to find the medication errors caused by the Inappropriate prescribing. It is the systematic tool for analysing the quality of medical care, including the procedures used for diagnosis and treatment.
Methods: An observational, non-interventional study carried in general medicine department. A list of 10 questions were prepared to assess the appropriateness of prescribing patterns.
Results: A total of 110 prescriptions were collected and audited. Out of 110 prescriptions 6 (5%) prescriptions have therapeutic duplications and 21 (19%) classes of drugs in the prescription have interactions with each other. Found 8 (7%) drug food interactions. Found 100% appropriateness of drug ordered based on patient diagnosis, dosage of drug, frequency of drug, route of administration, drug intended to have a drug order in the medication chart, medication orders are clear, legible, dated, timed, names and signed, medication chart do not have any unapproved abbreviations
Conclusion: This study shows most of the prescribers need to check for drug duplication, drug-drug interactions and drug-food interactions before prescribing the medicines.

Keywords: Prescription audit, Inappropriate prescribing, Drug interactions, Therapeutic duplication

INTRODUCTION

Prescription audit is the systematic, critical analysis provide quality of medical care, including the procedures used for diagnosis and treatment, the use of resources, and the resulting outcome and quality of life for the patients and it is a continuous cycle, involves observational practice, comparing practice with standards, setting standards, implementing changes and observing new practice.[1]

By prescription audit can assess the quality of medical care, because it is based on documented evidence to support diagnosis and treatment. It has an objective evidence and it is a systemic way of evaluating quality of treatment and care provided by the physicians. Prescription audit is designed for a particular purpose that is the objective documentation by and to the doctors for conforming to their own standards.

Irrational prescribing is a global problem. The prescribing pattern should be rational and it is most important because, bad prescribing habits including misuse, overuse and underuse of medicines can lead to unsafe treatment, prolong hospitalization, health hazards, economic burden on the patients and wastage of valuable resources. All these can impact the quality of life of patient.[2]

A set of 'core prescribing indicators' formulated by the world health organization (WHO) for improvement in

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Case report on atypical Posterior Reversible Encephalopathy Syndrome (PRES) associated with antepartum eclampsia

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Abstract

A 21-year-old woman primi gravida with gestational age 39 week 3 days was presented to emergency department with 2 episodes of new onset tonic-clonic seizures. Upon admission her blood pressure was found to be 150/100mm of Hg (no past history of hypertension) and pulse rate 104bpm. She was found to be proteinuria (2+) by dipstick urine analysis. Based on evidences she was diagnosed as ante partum eclampsia and was stabilized with Inj. Labetalol 20mg, Inj MgSo4 loading dose as per Pritchard regimen and Inj mannitol 100 ml. Later she was posted for emergency LSCS and gave birth to a child with CPD during labor. During the post operative day two patient experienced severe headache, nausea and blurred vision. She was ordered for MRI which revealed a clear picture of Posterior Reversible Encephalopathy Syndrome (PRES) with bilateral symmetrical T2 and FLAIR hyper intensities involving predominantly cortical and sub cortical white matter bilateral fronto-parietal and occipital lobes. PRES is usually reversible and patient improved after management with antihypertensives, antiepileptic and monitoring of blood pressure.

Keywords

eclampsia; proteinuria; encephalopathy; reversible; MRI

Abbreviations

CPD: Cephalo pelvic disproportion; LSCS: Lower segment caesarean section; MRI: Magnetic resonance imaging; PRES: Posterior reversible encephalopathy syndrome; HELLP: Hemolysis elevated liver enzymes low platelet count

Introduction

Posterior reversible encephalopathy syndrome (also known as posterior leuko encephalopathy syndrome) is a clinical-neuro-radiological syndrome that is caused due to various underlying clinical condi-

CASE REPORT

A Case Report on Herpes Zoster Eruption Associated with Chronic Obstructive Pulmonary Disease

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ABSTRACT

Herpes zoster is the secondary infection of reactivated varicella zoster virus. This condition is associated with vesicular rashes accompanied by severe pain. The risk of herpes zoster occurrence is more in people with diseases such as human immunodeficiency virus, chronic obstructive pulmonary disease (COPD), and asthma including the elderly and those receiving chemotherapy or steroids. Hereby, we report a case of 67-year--old male patient who is a known case of COPD and developed features such as exfoliation of skin and vesicular lesions over thoracic region during his stay in the hospital. His condition was diagnosed as herpes zoster infection and treated with oral and topical antiviral agents. The patient was recovered from his condition and got discharged after a week.

Key words: Chronic obstructive pulmonary disease, herpes zoster, immunity, steroids, viral reactivation

INTRODUCTION

Herpes zoster or shingles is the reactivation of endogenous varicella zoster virus (VZV) that was present in latent form within sensory ganglia following a prior attack of chickenpox.[1] It is characterized by symptoms such as fever, malaise, and burning pain followed by the outbreak of vesicular rash limited to the area of skin. It can be diagnosed based on the physical examination by the presence of the distinctive dermatomal rash and laboratory testing such as serology and polymerase chain reaction is rarely required to differentiate it from herpes simplex.[2] Management depends on whether the patient is immunocompetent or immune compromised. This case report emphasizes the risk of acquired infections and viral reactivation during the hospitalization period in the chronic obstructive pulmonary disease (COPD) patient and its management.

CASE REPORT

A 67-year-old male patient was admitted in Government General Hospital, Kadapa, with complaints of breathlessness associated with chest pain and cough due to acute exacerbation of COPD. His vitals were blood pressure 120/80 mmHg, heart rate 72 bpm, and respiratory rate 20/min. Chest X-ray revealed hyperinflation of lungs and ECG was found to be normal. Laboratory investigations include Hb – 11 g%, Tc: 9000 cells/mm Dc (70, 30, 3, 1, 0), platelets – 4 lak, and sr. creatinine – 0.8 mg/dl. He was treated with theophylline 100 mg P/O OD, salbutamol 2 mg P/O OD, and amoxicillin 1 g IV BD, and oxygen inhalation support was provided.

During the 3rd day of hospital stay, he developed symptoms like exfoliation of skin on the left side of chest [Figure 1]. On dermatological examination, these exfoliations were associated with the vesicular lesions hyperpigmented with pain over the thoracic (T_4) dermatome. His condition was diagnosed as herpes zoster infection due to the immune suppression of existing disease COPD.

He was prescribed with T. acyclovir 5 times a day for 7 days, calamine lotion, and 5% w/v of acyclovir cream. After using the medications for 1 week, the patient condition was improved symptomatically and skin lesions were subsided and got discharged.

DISCUSSION

VZV is highly contagious and occurs during childhood leading to chickenpox or primary VZV infection. During this stage, virus enters the endings of sensory nerves in the skin and remains inactive as dormant stage in those sensory neurons. Later, the viral reactivation occurs due to various factors such as age, use of chemotherapy, and steroids, several disease conditions including autoimmune diseases, human immunodeficiency virus, diabetes mellitus COPD, and asthma. This outbreak is clinically recognized as herpes zoster.[3,4] This is also associated with a decline in cell-mediated immunity either due to aging or as a result of immune suppression.[5] Here, the patient had a history of varicella infection during his childhood and current outbreak of herpes zoster can be correlated to his age, comorbidities such as COPD, and usage of steroids

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DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPIC METHOD FOR THE ESTIMATION OF LYMECYCLINE IN CAPSULE DOSAGE FORM

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Keywords:

Lymecycline, Antibiotic, Capsule, Beer's law, Linearity

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ABSTRACT: Lymecycline is a tetracycline broad-spectrum antibiotic. Present work describes a simple, accurate, precise, economical and reproducible spectrophotometric method in ultraviolet region has been developed and validated for the assay of Lymecycline in bulk and in Pharmaceutical formulations in diluent. Lymecycline is a tetracycline broad-spectrum antibiotic. Lymecycline like other tetracyclines is used to treat a range of infections Lymecycline exhibits absorption maxima at 270 nm in diluent. Beer's law was found to be obeyed in the concentration range of 7.5-22.5 µg/ml. The optimum concentration of the Lymecycline was found to be 15 µg/ml. This concentration of Lymecycline was shown good absorbance valves at respective wavelengths was found to be 0.490. Linearity studies were carried out and the range was found to be 7.5-22.5 µg/ml for Lymecycline in diluent. The regression coefficient value of Lymecycline was found to be 0.999 which was not less than 0.995. The method is accurate, precise and economical. In this proposed method, there was no interference from common pharmaceutical excipients. The results of the analysis were validated statistically as per the ICH guidelines. The proposed method was successfully used for the routine analysis of the Lymecycline in bulk and in its capsule dosage form.

INTRODUCTION: Lymecycline is a tetracycline broad-spectrum antibiotic. It is approximately 5000 times more soluble than tetracycline base and is unique amongst tetracyclines in that it is absorbed by the "active transport" process across the intestinal wall, making use of the same fast and efficient mechanism by which carbohydrates are absorbed. It inhibits cell growth by inhibiting translation A literature survey carried out revealed that there is no method reported for estimation of Lymecycline in capsule dosage form by using UV spectroscopy.

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Lymecycline is a yellow powder with hygroscopic nature, very soluble in water, practically insoluble in ethanol and methylene chloride. It's melting point is 192.5 °C, Molecular formula $C_{29}H_{38}N_4O_{10}$. and having a molecular weight of 602.632 gm/mol, and its chemical names are Limeciclina, Lymecyclinum, N-Lysinomethyl tetracycline, Tetracycline-L-methylene lysine, Tetracycline-L-methylene lysine.

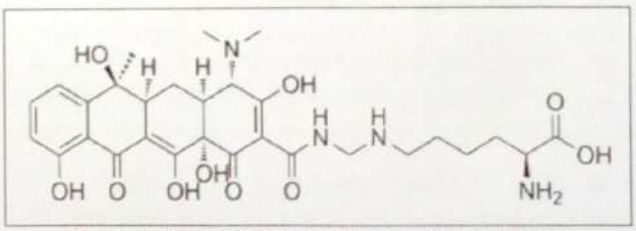

FIG. 1: STRUCTURE OF LYMECYCLINE

UV- visible spectrophotometry is one of the most frequently employed techniques in pharmaceutical

analysis. It involves measuring the amount of ultraviolet or visible radiation absorbed by a substance in solution. An instrument that measures the ratio, or function of ratio, of the intensity of two beams of light in the UV- visible region is called Ultraviolet-visible spectro-photometers.

This absorption spectroscopy uses electromagnetic radiations between 190 nm to 800 nm and is divided into the ultraviolet (UV, 190-400 nm) and visible (VIS, 400-800 nm) regions.

Since, the absorption of ultraviolet or visible radiation by a molecule leads transition among electronic energy levels of the molecule, it is also often called electronic spectroscopy. The information provided by NMR and IR spectral data leads to valuable structural proposals.

Method Development: Method development is the process of proving that an analytical method is acceptable for use to measure the concentration of API in a specific dosage form.

Basic criteria for new method development of drug analysis:

- The drug or drug combination may not be official in any pharmacopeias.
- A proper analytical procedure for the drug may not be available in the literature due to patent regulations,
- Analytical method may not be available for the drug in the form of a formulation due to the interference caused by the formulation excipients,
- Analytical methods for the quantitation of the quantitation of the drug in biological fluids may not be available.
- Analytical methods for a drug in combination with other drugs may not be available
- The existing analytical procedure may require expensive reagents and solvents. It may also involve cumbersome extraction and separation procedures, and these may not be reliable.

Method development should be based on several conditions. It is preferable to have maximum sample information to make development fast and desirable for the intended analytical method, application and physical-chemical properties are most preferable as primary information. Moreover, separation goal needs to define at beginning so; appropriate method can be developed for the purpose. An LC method development is a huge area for even pharmaceuticals with regulatory requirements of international standards. So, before method validation and usage at quality control, many aspects need to focus as per ICH guidelines.

Method Validation: Validation of an analytical method is the essential step in the integral process of quality assurance and quality control of chemical measurements in the material systems. According to USFDA, validation is defined as the process a high degree of assurance that a specific process will constantly produce a product meeting its predetermined specifications and quality attribute. The primary objective of validation is to form a basis for written procedures for production and process control which are designed to assure that the drug products have the identity, strength, quality and purity they purport or are represented to process, material, activity or system leads to expected results.

This process consists of the establishment of the performance characteristics and the limitations of the methods. Method validation is required when a new method is being developed. Revision established method. When established methods are used in different laboratories and different analysts.

MATERIALS AND METHODS:

Materials: Lymecycline was obtained as a gift sample from Enaltec Labs Pvt. Ltd. Navi Mumbai Maharashtra, Lymzit 408 mg capsules purchased from Mednear, Diluent as 0.01M Hcl, and all other reagents used were of analytical grade.

Methods:

UV Spectroscopic Method Development: UV method was planned to develop for the estimation of Lymecycline. It starts with the choice of the appropriate technique, chromatography, spectroscopy or any other suitable analytical technique.

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Hydrotropy – A Solubility Enhancement Tool for the Estimation of Cefdinir in its Suspension Dosage Form by UV-Spectroscopy

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Abstract : Present work describes development and validation of a simple, novel, accurate, precise, economical and reproducible spectrophotometric method in ultraviolet region for the assay of Cefdinir in suspension formulation using sodium bicarbonate and distilled water (1:9) as hydrotropic solvent. Cefdinir exhibits absorption maxima at 287nm in hydrotropic solvent. Beer's law was found to be obeyed in the concentration range of 2.5-17.5µg/ml. The developed method was validated as per the ICH guidelines. The calibration plot was linear over the concentration range investigated (2.5–17.5µg/ml) for Cefdinir in hydrotropic solvent with correlation coefficient, r^2, 0.99903. The method is accurate, precise and economical. In this proposed method, there was no interference from common pharmaceutical excipients. The proposed method is therefore successfully used for the routine analysis of the Cefdinir in its suspension dosage form.

Keywords : Cefdinir, Hydrotropy, UV-Spectroscopic method, Validation, ICH.

Introduction

Pharmaceutical analysis plays an important role right from testing of raw materials, in process quality checks to the analysis of finished products. Pharmaceutical analysis is considered to determine identity, strength, quality and purity of drug samples [1-2]. The aqueous solubility of insoluble and slightly soluble drugs has been increased by various methods to avoid the usage of organic solvents. Among those techniques Hydrotropy is the one used for enhancement in solubility of insoluble solute in water by adding the agent called as hydrotrope. Hydrotropes are micelle-forming substances, either liquids or solids, organic or inorganic, capable of solubilizing insoluble compounds. The formation of molecular structure in the form of complexes can be reason for the solubility enhancement [3-4].

Chemically Cefdinir is 5-thia-1-aza bicyclo (4.2.0) oct-2-ene-2-carboxylic acid (Fig. 1). It is a semi-synthetic, broad-spectrum, third-generation cephalosporin. The molecular formula of Cefdinir is ($C_{14}H_{13}N_5O_5S_2$) with a molecular weight of 395.42g/mole [5-6]. It has a broad spectrum of activity, good therapeutic action against susceptible Gram-positive and Gram- negative bacteria having positive microbial

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DOCKING, SYNTHESIS AND BIOLOGICAL EVALUATION OF NOVEL QUINOLINE CONTAINING SCHIFF BASES FOR ANTI-INFLAMMATORY AND ANTI-OXIDANT ACTIVITIES

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Keywords:

Quinolines, *In-silico*, Docking, Anti-inflammatory, Grind stone technique, Reflux, 2-chloro quinoline 3-carbaldehyde

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ABSTRACT: Quinolines bears a very good synthon so that a variety of novel heterocyclic with good pharmaceutical profile can be designed. There are various biological activities for quinolones such as antibacterial, antimalarial and various drugs possessing quinolone as nucleus are ciprofloxacin (Cipro), lomefloxacin (Maxaquin), norfloxacin (Noroxin), ofloxacin (Floxin), moxifloxacin (Avelox) and levofloxacin (Levaquin). So, in the present work 2-chloro quinoline 3-carbaldehyde containing quinolines were synthesized by using solvent conservation techniques like reflux technique. Various quinolines derivatives were synthesized by the - condensation reaction between dimethylformamide, $PoCl_3$ and different substituted aniline to give 2-chloro 3-carbaldehyde(1a). The reaction of 2-chloro 3- carbaldehyde with metformin gives quinolines Schiff bases as final compound(2a-2d). The obtained product was purified and structures were confirmed by TLC, MP & IR spectroscopy. All the compounds were screened for *in-vitro* anti-inflammatory activity using diclofenac sodium as standard by using protein denaturation method. Further, the selected compounds also studied for anti-inflammatory activity by *in-vitro* methods and anti-oxidant activity by hydrogen peroxide methods. Some of the compounds have shown significant activities compared to standard.

INTRODUCTION: Quinolines was discovered in coal tar distillate by Runge in 1832 & named Leukol. It is a heterocyclic scaffold of paramount importance to the human race. Quinoline (or) 1-azo-napthlene or benzo (b) pyridine is nitrogen-containing aromatic compound, it has molecular formula of C_9H_7N & its molecular weight is 129.16.

The logP value is 2.09 & has an acidic Pkb of 4.85 & basic Pka of 9.5. It is a weak tertiary base. It shows both electophilic and nucleophilic substitution reactions. It is non-toxic to humans on oral absorption and inhalation. Quinoline nucleus is occurred from several natural compounds (cinchona alkaloids) and pharmacologically active substance displaying abroad range of biological activity [1-5].

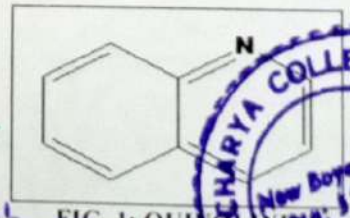

FIG. 1: QUI[illegible]

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DEVELOPMENT OF VALIDATED STABILITY INDICATING HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC ASSAY METHOD FOR THE SIMULTANEOUS ESTIMATION OF IVACAFTOR AND TEZACAFTOR IN BULK AND PHARMACEUTICAL DOSAGE FORM BY RP-HPLC

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Key Words
Ivacaftor, Tezacaftor, RP-HPLC, Method development and Method Validation

ABSTRACT

Objective: Ivacaftor and Tezacaftor are used in treatment of cystic fibrosis in certain people. The aim of the present study was to develop and validate a rapid, simple, sensitive, precise and accurate reverse phase high performance liquid chromatographic (RP-HPLC) method for simultaneous determination of Ivacaftor and Tezacaftor in bulk and tablet dosage form. **Methods:** Chromatographic separation of these two drugs was achieved on Kromosil C18 column (250 mm x 2.1 mm, 1.7 µm) as stationary phase with a mobile phase of acetonitrile: water (55:45 v/v) at a flow rate of 0.9 ml/min isocratically and photo diode array (PDA) detection at 292 nm. The retention times of Ivacaftor and Tezacaftor were found to be 2.212 min and 2.752 min respectively. **Results and Discussion:** The proposed method was validated for system suitability, linearity, accuracy, precision, LOD, LOQ and robustness. The calibration curves were linear in the concentration range of 15-90 to 10-60 µg/ml of the working concentration (r^2 = 0.999) for both the drugs in binary mixture. The LOD was found to be 0.07 µg/ml and 0.01 µg/ml and LOQ was found to be 0.22 µg/ml and 0.03 µg/ml for Ivacaftor and Tezacaftor respectively. **Conclusion:** Hence the proposed RP-HPLC method can be used in routine analysis of drugs in bulk as well as in tablets containing Ivacaftor and Tezacaftor.

INTRODUCTION

Ivacaftor is chemically N-(2, 4-di-tert-butyl-5-hydroxyphenyl)-4-oxo-1,4-dihydroquinoline-3-carboxamide. Tezacaftor is chemically 1-(2,2-difluoro-2H-1,3-benzodioxol-5-yl)-N-{1-[(2R)-2,3-dihydroxypropyl]- 6-fluoro-2- (1-hydroxy-2-methylpropan-2-yl)-1H- indol-5-yl} cyclopropane-1- carboxamide. A combination of above drugs is used in the management of cystic fibrosis. Extensive literature survey revealed that there were analytical methods for the estimation of Ivacaftor with Lumacaftor [1-3]. A bioanalytical method has been proposed for the estimation of Ivacaftor and Lumacaftor [4]. Two UPLC methods has been published for the estimation of Ivacaftor and Tezacaftor [5,6]. An ultra violet spectroscopic method has been established for the estimation of Ivacaftor and Tezacaftor [7]. An RP-HPLC method has been proposed for the estimation of Ivacaftor alone and in combination with Tezacaftor [8-11]. In the proposed methods

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In vitro anti-inflammatory activity of aqueous extract of *Pithecellobium dulce*

M Nagendra, SV Mani Deepika, D Ravi Shankar Babu, T Jyotshna and Dr. D Swarnalatha

Abstract
Aqueous extract of whole plant of *Pithecellobium dulce* (Family: Fabacia) was assessed for its anti-inflammatory activity by *in vitro* methods. *In vitro* anti-inflammatory activity was evaluated using egg albumin denaturation assay, at 10mg concentrations. Diclofenac sodium, used as standard drugs. The results showed *Pithecellobium dulce* at Leaf, fruit significantly (P 0.05) activity.

Keywords: *Pithecellobium dulce*, anti-inflammatory

Introduction
Inflammation is a complex process, which is frequently associated with pain and involves occurrences such as: the increase of vascular permeability, increase of protein denaturation and membrane alteration. When cells in the body are damaged by microbes, physical agents or chemical agents, the injury is in the form stress. Inflammation of tissue is due to response to stress. It is a defensive response that is characterized by redness, pain, heat, and swelling and loss of function in the injured area. Loss of function occurs depends on the site and extent of injury. Since inflammation is one of the body's nonspecific internal systems of defense, the response of a tissue to an accidental cut is similar to the response that results from other types of tissue damage, caused by burns due to heat, radiation, bacterial or viral invasion [1]
When tissue cells become injured they release kinins, prostroglandins and histamine. These work collectively to cause increased vasodilation (widening of blood capillaries) and permeability of the capillaries. This leads to increased blood flow to the injured site. These substances also act as chemical messengers that attract some of the body's natural defense cells a mechanism known as chemotaxis. Inflammation can be classified as either acute or chronic. Acute inflammation is the initial response of the body to harmful stimuli and is achieved by the increased movement of plasma and leukocytes (especially granulocytes) from the blood into the injured tissues. A cascade of biochemical events propagates and matures the inflammatory response, involving the local vascular system, the immune system, and various cells within the injured tissue. Prolonged inflammation, known as chronic inflammation, leads to a progressive shift in the type of cells present at the site of inflammation and is characterized by simultaneous destruction and healing of the tissue from the inflammatory process. Several experimental protocols of inflammation are used for evaluating the potency of drugs. The management of inflammation related diseases is a real issue in the rural community; the population in these areas uses many alternative drugs such as substances produced from medicinal plants.

Materials and Methods
Plant material
The whole plants *Pithecellobium dulce* were collected in fresh condition from kadapa region of rajampeta, Andhra Pradesh. Further identified by botanical survey of India (Rajampeta), kadapa. The plant was dried under shade then ground in to a uniform powder using a blender and stored in polythene bags at room temperature.

Preparation of extracts
The plant powder was loaded in to soxhlet extractor and subjected to extraction with water. After extraction, the solvent was distilled off and the extracts were concentrated on water bath to a dry residue and kept in a desiccator. Assessment of *in vitro* anti-inflammatory activity

Inhibition of albumin denaturation
According to previously reported protocol [3], The reaction mixture consisted of 0.2 ml of egg albumin (from fresh hen's egg), 2.8 ml of phosphate buffered saline (pH 6.4) and 2 ml of

19-20

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Development and validation of a new analytical RP-HPLC method for simultaneous determination of Glibenclamide and Atenolol in bulk

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Atenolol,
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ABSTRACT

A new, simple, reliable, fast, sensitive and economical RP-HPLC method was developed and validated for simultaneous estimation of two fixed-dose combinations frequently prescribed in coexisted chronic diseases such as diabetes (GLB) and hypertension (ATN) in bulk for the first time. The mobile phase used for the chromatographic runs consisted of 0.01N potassium dihydrogen ortho phosphate (pH 4.8) and acetonitrile (55:45, v/v). The separation was achieved on column (BDS C18 250 x 2.1mm, 1.6m) using isocratic mode. Drug peaks were well separated and were detected by a UV detector at 235.0 nm. The method was linear at the concentration range 2.5-15μg/ml for Glibenclamide (GLB) and 6.25-37.5μg/ml for Atenolol (ATN), respectively. The method has been validated according to ICH guidelines with respect to system suitability, specificity, precision, accuracy and robustness. The method was validated for system suitability, linearity, accuracy, precision, detection, quantification limits and robustness and was found it is acceptable in the range of 2.5–15 μg/ml for GLB and 6.25–37.5 μg/ml for ATN. The LOD and LOQ of GLB was found to be 0.48 μg/ml and 1.47μg/ml and for ATN was found to be 0.72μg/ml and 2.20 μg/ml, respectively. The method was applied to drug interaction studies of GLB with ATN to illustrate the scope and application of the methods to manage two different therapeutic classes of drugs, as they may co-administered in concurrent diseases.

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INTRODUCTION

Diabetes mellitus (DM) is by defects in insulin activity, insulin secretion or both which is a metabolic disorder characterized by hyperglycemia (International Diabetes Federation, 2015; Boyle *et al.*, 2010). The reason for the disease may be not enough insulin is produced in Type I DM (T1DM), glucose is not moved out into cells Type 2 DM (T2DM) (Bilous *et al.*, 2010) and another one is gestational diabetes that may occur during pregnancy. Complications such as stroke, coronary heart diseases, nephropathy, neuropathy and retinopathy make great contributions to mortality (Roglic and Unwin, 2010).

Diabetes mellitus have two to fourfold higher death rate due to cardiovascular diseases than others (Sowers *et al.*, 2001). Various treatment approaches for hypertension to reduce the risk of such complications (Mogensen *et al.*, 1991; Fuller *et al.*, 1983) in patients with T2DM. Stringent control over

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19-20

A Case Report on Pleural Effusion Induced by Pulmonary Tuberculosis Reactivation

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Abstract: *Tuberculosis is the major health problem in the developing countries and is caused by Mycobacterium Tuberculosis. Pleural Effusions are accumulation of fluid in the pleural space and is one of the manifestations of extra-pulmonary tuberculosis. Pulmonary tuberculosis induced pleural effusions are one of the forms of reactivated disease by the T-helper type 1 (Th1) cells. Sometimes pleural effusions are also reported in patients who are taking drugs like Bromocriptine, Ergotamine and also exposure to Asbestos. Case Presentation: In this case report we present a case of 78 years old man who admitted in the hospital with complaints of left sided chest pain, shortness of breath and cough associated sputum with fever and had a past medical history of known case of pulmonary tuberculosis and used the anti-tubercular therapy five months back and discontinued the therapy by last one month. Patient had a history of use of Ergotamine tablets for his recurrent headaches as OTC medication. After clear examination this was confirmed as reactivated pulmonary tuberculosis with pleural effusion. Conclusion: The patient condition was improved after usage of medications for symptomatic use and continued with anti-tubercular therapy.*

Keywords: Reactivation, Delayed hypersensitivity reaction, Ergotamine, T-helper cells

1. Introduction

Pleural Effusion is an accumulation of fluid in the pleural space of lungs. Mostly these pleural effusions are caused by Neoplasms, Heart failure, Infections and sometimes drug induced. Among the infections the common type of infections that is associated with pleural effusions is Tuberculosis. [1]Pleural effusion is an extra-pulmonary type of tuberculosis. Pathogenesis of initial event starts with the rupture of subpleural caseous focus in the lung in to pleural space and results in the recognition of mycobacterial antigens by the CD4+ T-lymphocytes (T-helper type 1 cells) and results in the delayed type of hypersensitivity reaction. These tuberculosis associated pleural effusions are unilateral and small to moderate in size.[2]Pleural fluid is associated with the protein level of >5gm/dl, reduced glucose concentration, scattered mesothelial cells with small lymphocytes. However effusion and symptoms are resolved within month's patients again tends to develop active form of tuberculosis. [3]In this case report we describe a patient of reactivated pulmonary tuberculosis with pleural effusion.

2. Case Report

A 78 years old male patient was admitted in General Medicine Department of Government General Hospital in Kadapa with the chief complaints of left sided chest Pain, shortness of breath and productive cough associated with fever since 3 days. Patient past medical history reveals he is a known case of tuberculosis 5 months back and took the anti-tubercular therapy for 5 months and discontinued the therapy by last one month. His ANTI-TB drug regimen category includes Rifampicin (150mg), Isoniazid (75mg) and Ethambutol Hydrochloride tablets (275mg) taking [illegible]

As part of regular clinical pharmacy services during pharmacist rounds the patient was interviewed for medication history, patient revealed the usage of [illegible] tartrate and caffeine tablet since 10years for hisrecurrent headaches as a symptomatic relief which is remained unidentified by the physician during the treatment. On general examination the patient was conscious and coherent and his vitals were as follows BP-124/72, Pulse-117/min, Respiraton-18/min, CVS-S1S2+, CNS- no abnormality.

Investigations

His laboratory investigations were RBS-99mg/dl, Urea-55mg/dl, creatinine-1.2mg/dl, serum bilirubin-2.1mg/dl, HIV&HBS Ag- negative &non-reactive. Sputum culturing shows the presence of Candida Spp.

Ultrasonography of Abdomen.

Free fluid collection in the left lobe of lung lower pole mainly 5×3cms inside in 6thICS in mid axillary line. No pleural thickening in left sided. Clinical evaluation was done and condition was diagnosed as reactivated pulmonary tuberculosis with left sided pleural effusion. The patient was treated symptomatically with nebuliser Budesonide, inj. Theophylline- 2cc IM O.D, inj. Pantoprazole-40mg IV OD, Syrup Ambroxol-5ml TID, Tab. B Complex-OD, inj. Tramadol- IM BD and tab. Paracetamol 500mg BD.

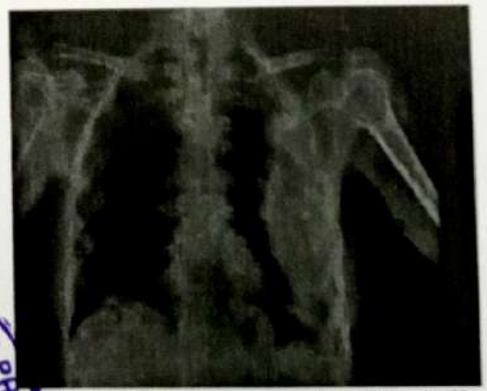

Figure 1: Patient Chest x-ray revealingpleural effusion

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Evaluation of Rational Use of Antibiotics and Incidence of Surgical Site Infections in a Tertiary Care Hospital

Shaik Sajida, Byreni Vinuthna, Chakka Gopinath, Shaik Amanulla, Giri Rajasekhar Dornadula

Abstract

Context: *Antimicrobial resistance is a major health issue nowadays. It can be reduced by framing, educating health care professionals, strictly following and reviewing the guidelines for antibiotics usage. Many hospitals are not following standard guidelines for antibiotics usage which has led to overuse of antibiotics which contributes for the emergence of resistant strains of microbes against antibiotics. Antibiotics are used pre-operatively to reduce the risk of surgical site infections. The use of surgical prophylaxis has become an essential component of the standard of care in virtually all surgical procedures and has resulted in reduced risk of post-operative infections.* ***Aims:*** *To evaluate the rational use of antibiotics and incidence of SSI in a tertiary care hospital. Objectives: (1). To assess the rational use of antibiotics in surgery based on ICMR guidelines. (2). To categorize the surgeries based on anatomical site. (3). To assess the incidence of surgical site infections. (4). To recommend the preventive measures for surgical site infection to the patients.* ***Methods and materials****: A prospective observational study conducted in a tertiary care government hospital from August 2017 to January 2018. Patients' demographic characteristics, past and present medical history, type of surgery performed, prophylactic antibiotic given, and treatment charts were recorded from patient's case sheets. Statistical analysis: Microsoft Excel and descriptive statistics were used to analyze the data.* ***Results****: In present study, appropriateness of prophylaxis was compared with ICMR guidelines and evaluated by four different criteria (antimicrobial agent, ROA, Dose, and timing of prophylaxis). The most common type of surgery performed in our hospital is hernioplasty (30%) and the most common prophylactic antibiotic used was ceftriaxone. The percentage of patients with SSI was 1.6% and percentage of patients without SSI was 98.3%.*

Keywords: *SSI, surgical prophylaxis, antibiotics, rational use*

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Cardioprotective effect of *pulicaria wightania* against isoproterenol induced myocardial infarction in experimental rats

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ABSTRACT

The current study was carried out to evaluate the cardio protective activity of Pulicaria Wightiana against Isoproterenol (ISO) induced myocardial infarction (MI). Pretreatment to the different groups were given for 30 days and ISO was administered at last two days with an interval of 24 hrs. Due to chronic ionotropy ISO induces MI. Blood was collected at the last day of experimental period and biomarkers were observed. The results indicate that the extract exhibited significant cardioprotective activity.

Keywords: Abutilon indicum, Medicinal, plant.

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INTRODUCTION

Myocardial Infarction (MI) is the acute condition of necrosis of the myocardium that occurs a result of imbalance between coronary blood supply and myocardium demand. Myocardial infarction normally known as a heart attack, happens when flow of blood reduces or stops to a part of the heart, then causes damage to the muscle [1].

Isoproterenol drug (ISO) is a artificial catecholamine which is a β-adrenergic agonist; on high concentrations it depletes the endogenous stores, energy reserves of cardiac myocytes and results in biochemical, structural changes which are responsible for irreversible damage. Chemically, ISO is an L-B-(3, 4-dihydroxyphenyl)-or-isopropyl amino ethanol hydrochloride [2].

The pathophysiological changes as induced by ISO mimics to a larger extent with those occurring in humans [3]. ISO is a β- adrenergic receptor agonist that increases cytosolic cAMP[4]. The drug hormone receptor complex initiates enzyme adenyl cyclase on the internal surface of the plasma membrane of the specific cells. This accelerates the intracellular formation of cyclic adenosine monophosphate (cyclic AMP), the second "messenger" which then stimulates or inhibits various metabolic or physiological processes [5], [6]. ISO increase the activities of Raf -I kinase and MAP kinase, which accelerate phenylalanine incorporation into proteins [7], leading to cardiomyocyte hypertrophy[8].

ISO causes increase in oxidative stress resulting in increase free radical activity. ISO induced biochemical & histopathological alterations observed in animal model are similar to human myocardial infarction. ISO was administered at a dose of 85 mg/kg s.c. body weight [7].

Herbal drugs exhibit medicinal properties in the treatment of heart ailments and need to explores to identify their potential application in prevention and therapy of human ailments and also used to treat myocardial infarction. While herbs like *Moringa olifera, Withania somnifera* [9] etc are helpful in the treatment of cardiovascular disorders.

WHO currently encourages, recommend and promote conventional as well as natural remedies in the national health care programmes, as they available

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COMPARATIVE STUDIES ON *IN VITRO* ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF *SESBANIA SESBAN* SEEDS AND *TEPHROSIACALOPHYLLA* LEAVES

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Key Words

Sesbania sesban, Tephrosia calophylla, MIC values,

ABSTRACT

The current research involves the study of antimicrobial and antioxidant activities of methanolic extracts of *Tephrosiacalophylla* leaves (METcL), *Sesbania sesban* seeds (MESsS) and petroleum ether extract of *Sesbania sesban*seeds (PESsS) using *in-vitro* methods. The antioxidant activity of extracts was evaluated by using reducing power assay, H_2O_2 scavenging activity, superoxide radical scavenging activity using ascorbic acid as standard. The minimum inhibitory concentration (MIC) values and antimicrobial activity of extracts was screened by disc diffusion method against 8 microorganisms (gram positive and gram negative) using different antibiotics as standard. The results of this study showed that METcL, MESsS, PESsS possess a potential antioxidant activity and antibacterial activity in contrast to the standards.

INTRODUCTION

Oxidative damage is a result of excessive generation of ROS induced by various stimuli and unbalanced antioxidant protection capacity. ROS can damage cells by initiating chemical chain reactions such as lipid peroxidation, or by oxidizing DNA or by altering membrane fluidity. Oxidative damage may lead to a variety of patho-physiological processes such as inflammation, heart disease, diabetes, parkinson's disease, genotoxicity and cancer[1, 2].Antioxidants may be defined as compounds that inhibit or de-lay the oxidation of other molecules by inhibiting the initiation or propagation of oxidizing chain reactions[3]. Recently there has been a surge of interest in the therapeutic potential of medicinal plants as antioxidants in reducing such free radical-induced tissue injury[4]. Natural antioxidants constitute a broad range of compounds including phenolic compounds, nitrogen compounds and carotenoids. In recent years, there has been increasing interest in finding antioxidants from natural sources, since they can protect the human body from free radicals and retard the progress of many chronic diseases[5]. Medicinal plants represent a rich source of antimicrobial agents in India and are widely used by all sections of people either directly as folk remedies or in different indigenous systems of medicine or indirectly in the pharmaceutical preparations of modern medicines.[6]. Although hundreds of plant species have been tested for antimicrobial properties, the vast majority have not yet been adequately evaluated[7]. *Tephrosia* is a large tropical and subtropical

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RESEARCH ARTICLE

Formulation and Evaluation of Fast Dissolving Tablets of Risperidone

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ABSTRACT

The present study was aimed towards the formulation and *In-vitro* evaluation of Rapid release tablets by direct compression method using Risperidone as a model drug to enhance patient compliance. Risperidone is an Antipsychotic drug, effective in the treatment of psychosis including schizophrenic, paranoid, schizoaffective, bipolar disorder, and other psychotic disorders. The half-life of the drug is about 4 hours and oral dose is 6 mg/day orally. Rapid release tablets provide instantaneous disintegration of tablet after oral administration. Rapid release tablets of Risperidone were prepared by using crospovidone and croscarmellose sodium in different concentrations as superdisintegrants. All the batches were prepared by direct compression method. Prepared tablets were evaluated for weight variation, hardness, friability, *in-vitro* disintegration time, dispersion time, thickness, drug content, wetting time and *in-vitro* dissolution study. By considering disintegration time and concentration of superdisintegrant, formulation F6 (crospovidone) showed maximum drug release of 98.93% and is considered as an optimized formulation which showed maximum percentage of drug release.

Keyword: Risperidone, Rapid release, Crospovidone, Croscarmellose sodium.

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CONTENTS

1. Introduction

Fast dissolving tablets (FDT) dissolve rapidly in the mouth and provide an excellent mouth feel. The tablet comprises a compound which melts at about 37°C. Many patients express difficulty in swallowing tablets and hard gelatin

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19-90

Evaluation Of *In Vitro* Antiurolithiatic Activity Of Naringin

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ABSTRACT

The Aim of the present study is to assess antiurolithiatic action of naringin ***In- vitro*** examine frameworks of urolithiasis. Evaluation was done by three distinctive ***In vitro*** models to be specific nucleation nucleation assay, aggregation assay and oxalate depletion assay. The hindrance of nucleation appeared by naringin 73.090±3.987% and cystone 81.1677±3.237% at 1000 µg/ml. Also, naringin and cystone indicated hindrance of precious stone collection by 68.193±4.171% and 78.390±1.255% at 1000 µg/ml concentration, recommending that naringin acting adequately contrasted with cystone. Aside from this, Percent decrease in development of naringin was seen as 73.090±3.987% while, 81.677±3.237% with Cystone at 1000 µg/ml. The discoveries of ***In vitro*** investigation uncover that naringin has noteworthy antiurolithiatic action against Calcium oxalate urolithiasis which could be ascribed to its flavonoids content.

Key words: Nucleation, Naringin, Aggregation, Flavonoids, Urolithiasis

1. INTRODUCTION:

Nephrolithiasis is a condition where an individual forms calculus inside the renal pelvis and tubular lumens. It may happen when the urinary centralization of crystal framing substances (calcium, oxalate, uric corrosive) is high and that of substances that control stone advancement (citrate) is low1. The disease is both normal among people with evaluated commonness among the number of inhabitants in 2–3% and an expected lifetime risk of 12% for males and 5–6% for females2. Flavonoids are a huge gathering of plant polyphenols with assumed useful consequences for a few regular ailments. The antioxidant, anti-inflammatory, ACE-inhibitory, and diuretic activities of polyphenols are contributive to the calcium oxalate calculi aversion3. The flavonoids naringin happens normally in citrus natural products, particularly in grapefruit, where naringin is liable for the organic product's unpleasant taste. Various potential remedial impacts of naringin including cardiovascular, hypolipidemic, anti-atherosclerotic, anti-diabetic, neuroprotective, hepatoprotective, and anti-cancer4. Regardless of their set up nephroprotective role just as conventional cases for their anti-urolithiasis potential, no screening has been completed so far to set up the antiurolithiatic activity of naringin. Accordingly, the current examination was completed for the screening of the anti-urolithiasis capability of naringin against calcium oxalate crystallization in ***In vitro*** methods.

2. MATERIALS& METHODS:

Naringin was purchased from Sigma Aldrich and made dilutions as required to different assay methods.

2.1. Nucleation assay:

The effect of naringin on calcium oxalate (Calcium oxalate) crystals advancement was managed by strategies for nucleation examine. Calcium chloride (CaCl2) (5 mmol/l) and sodium oxalate (Na2C2O4) course of action (7.5 mmol/l) were set up in Tris-HCl (0.05 mol/l) and NaCl (0.15 mol/l) support (pH 6.5). Dilutions of naringin from 100-1000 µg/ml were set up in distilled water. One milliliter of each naringin solution was mixed in with 3 ml CaCl2 arrangement pursued by the expansion of 3 ml Na2C2O4 solution. Final mixtures were incubated for 30 min at 37°C. The optical density (OD) of the mixtures was then estimated at 620 nm wavelength. Percent inhibition of nucleation by naringin was determined utilizing under the referenced equation and contrasted with that determined for the standard polyherbal tranquilize, Cystone[5].

$$\% \text{ Inhibition} = \left\{1 - \frac{OD\ Test}{OD\ Control}\right\} \times 100$$

2.2. Aggregation assay:

The effect of naringin on Calcium oxalate crystal aggregation was determined by means of aggregation assay. CaCl2 and Na2C2O4 solutions (50 mmol/l each) were mixed together, heated to 60 °C in a water bath for 1 h and then incubated overnight at 37°C to prepare seed Calcium oxalate crystals. After drying, Calcium oxalate crystal solution (0.8 mg/ml) was prepared in a 0.05 mol/l Tris-HCl and 0.15 mol/l NaCl buffer (pH 6.5). One milliliter of aliquots (100-1000 µg/ml) of naringin was added to a 3 ml Calcium oxalate solution, vortexed and then incubated at 37°C for 30 min. The optical density of the final mixtures was then read at 620 nm

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Review Article

Review on Novel Drugs for Gout

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ABSTRACT

Gout is a kind of arthritis which is caused by the accumulation of monosodium uric acid crystals especially in joints. 8.3 million People in the United States are affected with gout and Prevalence is approximately 20% in patients with a family history of gout. Controlling the acute flares has been the first priority in the management of gout. As there are limitations in approved therapies for gout especially with patients who frequently have multiple comorbidities. Because of the greater understanding of the pathophysiology of gout, it has resulted in the discovery of new therapies to treat and prevent gout flares and underlying hyperuricemia. Novel therapies will lower serum urate levels or treat and prevent acute gouty flares. This review describes various novel drugs for treating the gout and their safety and efficacy when compared to other traditional drugs used for gout.

Keywords: Gout, Hyperuricemia, Anakinra, Canakinumab, Adrenocorticotropic hormone, Caspase inhibitors.

INTRODUCTION

Gout is the most common type of inflammatory arthritis in adults that occurs due to elevated serum urate levels resulting in deposition of monosodium urate (MSU) crystals in articular and periarticular tissues.[1] If serum uric acid level exceeds 6.8 mg/dl, it is termed as hyperuricemia. The prevalence of gout in the USA is 3.9 % which means 8.3 million adults are affected with gout whereas the prevalence of hyperuricemia in USA is 21.4 % or about 43.3 million individuals are affected.[2] Worldwide incidence of gout has been increased gradually due to poor dietary habits such as fast foods, lack of exercises, increased incidence of obesity and metabolic syndrome.[3]In spite of rise in prevalence, the current therapy for gout is often limited because of its side effects, various comorbidities such as such as cardiovascular disease, diabetes mellitus, hypertension, chronic kidney disease, metabolic syndrome) and drug-drug interactions.[4] Though the pathophysiology of hyperuricemia (HU) and gout is well understood, its management still remains remarkably suboptimal, leading to frequent recurrent flares, increased hospitalization rates in the US, and worsening economic burden.[3,5] Conventionally, lowering serum urate levels via inhibiting uric acid synthesis (de novo) has been the preferred approach with xanthine oxidase inhibitors such as allopurinol and febuxostat.[6] The better understanding of pathogenesis of gout over the past few decades provided the impetus for new, more specific therapeutic targets. This review describes all most all the new drugs for the treating inflammation in acute gout, including biologics such as Anakinra, Canakinumab, and Rilonacept. Apart from this, other anti-inflammatory agents such as Corticotrophin and Colchicine and Caspase inhibitors may be on the horizon for prophylaxis and treatment of acute gout flares. Additionally, the drugs like Benzbromarone, Arhalofenate, Lesinurad, Tranilast, Levotofisopam, Verinurad and Purine nucleoside phosphorylase inhibitor like Ulodesine are included in this review.

Anakinra

Anakinra is a recombinant human IL-1β receptor antagonist which has been approved by US FDA for rheumatoid arthritis and neonatal-onset multi-system inflammatory disease. To date, randomized controlled trials assessing anakinra's efficacy in the management of gout flares are still lacking[7], but there are some case series and uncontrolled trials which are supporting its efficacy in treating gout flares.[8,9] In practice, Anakinra is preferred off-label anti-IL-1β strategy among experienced "goutologists", based on its relative short half-life and lower cost when compared to Canakinumab.

Canakinumab

Canakinumab is a completely humanized anti-IL-1βmonoclonal antibody which binds to soluble IL-1β and thereby prevents receptor activation.[10, 11]US Food and Drug Administration (FDA) approved Canakinumab for cryopyrin-associated periodic fever syndromes, Muckle-Wells syndrome, familial cold auto-inflammatory syndrome, and systemic idiopathic juvenile arthritis.[12]In One double-blind study assessment of efficacy and safety of one dose of 150 mg Canakinumab against one single dose of triamcinolone injection at baseline and also during an acute gout attack in patients frequently flaring with contraindications to use of NSAIDs and/or colchicine has been performed.[13] This study proved Canakinumab is having a rapid onset in pain relief and increased the time between a flare, which is likely attributabletoitshalf-lifeof21–28days.[13, 14]Moreadverseeventswere observed in the Canakinumab group, which includes infections, neutropenia, and thrombocytopenia.[13] In another

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Research Article

Assessment of Medication Errors in Tertiary Care Hospital

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ABSTRACT

Medication errors are the most common and preventable causes of iatrogenic injuries. The main aim of the study is to identify the type, incidence, outcome of the medication errors and resolving them for better patient care. This was a prospective and observational study. Patients satisfying inclusion and exclusion criteria were enrolled in the study. The required data was collected by treatment chart review method. Inpatients are followed from day of admission to discharge. Type of Medication errors, causes, contributing factors of medication errors, outcome of events, and percentage of errors reaching the patient are evaluated and intervention is done. In a total of 250 cases 73 Medication errors were observed. Most of the errors are seen in patients of age group 21-30 (21.9%). In type of Medication errors 16 prescribing errors were detected (21.9%). Adverse drug reactions and drug interactions were found in 55 cases (75.34%). In department group most of the errors are seen in General medicine. The errors that reached the patients are 42(57.53%). Illegible prescriptions were 12(16.43%). Errors that occurred due to failure to adhere to work are 2. Intervention is done by informing to the staff in 61 cases (83.56%). In 11(15.06) cases the treatment was changed to correct drug. Early detection and intervention of Medication errors will improve the therapeutic outcomes. Implementation of the medication error reporting system in the hospital, educating nurses regarding effects of medication errors will reduce the cost of treatment, improves patient care and safety.

Keywords: Drug-Drug interactions, Iatrogenic injuries, Medication errors.

INTRODUCTION

The National Coordinating Council for Medication Error Reporting and prevention has defined medication error (ME) as, "Any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the health care professional, patient, or consumer.

Self-medication, poor communications between the prescriber and the patient, and even demand of the patient for medicine for each symptom, unethical drug promotion and inducement increases irrational prescribing. This increases in number of drugs per prescription which may lead to ME and DDIs. Hence monitoring of DDIs, rationality plus ME would be essential element of high quality of medical care. Prescribing of medications outside the accepted medical standards is known as inappropriate prescribing.

Types of Medication Errors

1. Prescription errors
2. Administration errors
3. Dispensing errors

Prescription Error

The first individual who can play an active role in preventing medication errors is the prescriber himself. It is difficult to quantify the extent of errors related to prescribing because many errors go undetected or unreported. Even if the prescription is accurate and complete, it may be miss interpreted if it cannot be read. Poorly written orders may delay the administration of medication. They can increase the potential for the serious medication error stemming from an incorrect understanding of the intended drug, dosage, route of administration or frequency of dosing.

Factors Contributing to Prescription Errors

Wrong time of administration in prescription, improper dose error, wrong dosage, monitoring errors, illegible hand writing errors, direction errors, and drug interaction errors contribute to the prescription errors.

Role of Pharmacists in Reducing Prescription Errors

Pharmacist can play a very critical and effective role in solving all types of the prescription errors. The doctors are always busy and they work in an environment which can contribute positively for such errors. The mistakes and errors have to be identified and brought to the notice of the doctors in a complementary and supportive role. Wherever required or needed, the evidence to the clinicians supporting the need for corrections are to be provided[1].

Administration Error

Nurses are often the last "gatekeeper" in the administration process to prevent medication errors. It is important to take the time needed to ensure patient safety, and to minimize distractions throughout the

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OPTIMIZATION OF RP-HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF DOLUTEGRAVIR AND RILPIVIRINE IN BINARY MIXTURE BY USING DESIGN OF EXPERIMENTS

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Key Words

RP-HPLC, Central composite design, Chemometric, Dolutegravir, Rilpivirine.

ABSTRACT

The present study describes the simultaneous assessment of the antiretroviral drugs in the binary mixture with the help of design of experiments for enhancing the robustness. The column employed was Kromosil 250 ×2.1mm, 1.7µ with temperature 30°C. The ranges of the independent variables used for the optimization were flow rate 0.9 to 1.1, wavelength 255 to 265 nm and composition of buffer in the mobile phase is 55 to 65 %. The influence of these independent variables on the output responses: retention time, peak area and resolution were evaluated. The three responses were simultaneous optimized by using central composite design. Optimum conditions chosen for the assay were flow rate 0.998ml/min, wavelength 257 nm and buffer and Acetonitrile taken in the ratio 57.4: 42.6 respectively. The retention time of Dolutegravir and Rilpivirine are 3.962 and 2.977 minutes respectively by employing the optimum conditions given by the design experiments. All the system suitability parameters were satisfied. Further the method has been validated by the regulatory guidelines framed by the ICH. The limit of detection and the limit of quantification were found to be 0.24 and 0.72 for Rilpivirine and 0.10 and 0.30 for Dolutegravir respectively. The method was found to be simple, linear, accurate, precise and robust. Hence the proposed method can be used for routine quality control of Dolutegravir and Rilpivirine in its tablet dosage forms.

INTRODUCTION

Dolutegravir sodium chemically, (4R,12aS)- 9- {[(2,4-difluorophenyl) methyl] carbamoyl} - 4-methyl-6,8-dioxo- 3,4,6,8,12,12a- Hexahydro-2H-pyrido [1',2':4,5] pyrazino [2,1-b][1,3]oxazin-7-olate, is a novel integrase strand transfer inhibitor active against Human Immunodeficiency Virus as shown in Figure 1. Dolutegravir (DTG) promoted name as Tivicay is an antiretroviral prescription utilized together with other drug to treat human immunodeficiency infection (HIV)- acquired immune deficiency syndrome. The drug is active against HIV type 1 (HIV-1) and also has some in vitro activity against HIV type 2 (HIV-2) (drug bank DB08930). It is taken through rally. DTG is a HIV integrase

Research Article

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*In–Silico d*esign, synthesis, characterization and biological evaluation of novel 2-azetidinone derivatives for anti–Leukemic activity

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Abstract: 2-Azetidinone shows biological activities like anti-bacterial, anti-microbial activity, anti-tubercular activity, and anti-cancer activity. 2-azetdinone derivatives were synthesized by simple procedures. The first step is synthesis of benzohydrazide through nucleophilic substitution reaction between methyl benzoate and hydrazine hydrate. The above formed compound is then treated with substituted aromatic aldehydes in the presence of catalytic amount of concentrated hydrochloric acid with stirring for one hour to give benzohydrazone which results in the formation of Schiff bases.Schiff bases undergone cyclisation in the presence of chloroacetylchloride and diethylenediamine by using ethanol as a solvent upon stirring for 4 hour's yielded 2-azetidinone derivatives. The *in-silico* anti-leukemic activity was determined by using the computational tools i.e. "PASS Online", "AutoDock4.2" and "ADMET" properties by online software's. Among these six derivatives compounds (AZT-6) was shown more activity when compared with the other five compounds.

Keywords: 2-azetidinone, *In-Silico* drug design, Anti-leukemic, TPK-BCR-ABL-1, Docking.

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I. Introduction

Tyrosine Protein Kinase BCR-ABL- 1 gene is a chimeric protein which is necessary to play a central role in the pathogenesis of Philadelphia (Ph) chromosome-positive leukemias, notably chronic myeloid leukemia (CML) [1]. Chronic myeloid leukemia (CML) contains primitive hematopoietic progenitor cells which is a clonal myeloproliferative disorder. The occurrence of chronic myeloid leukemia results by the Philadelphia translocation t (9;22) which fuses the long arm parts of chromosome 9 to chromosome 22 results in the formation of the hybrid gene, BCR-ABL-1. This protein product will be found in more than 95% of chronic myeloid leukemia patients which is a major cause of the disease [2].

Most significant areas of research in the field of medicinal chemistry were carried out on the heterocyclic compounds. Heterocyclic 2-azetidinones are considered as an important contribution to science and humanity, because they are the constituents of living organisms, natural products, drugs and many more substances which will be more useful to the mankind and society in all walks of life. The attention of the chemists has always drawn over the years for the synthesis of heterocyclic compounds because of their biological properties. Depending upon their physiological and industrial significances they are equally interesting for its theoretical implication for the diversity. Heterocyclic compounds are the large number of drugs introduced in pharmacopoeias every year. Synthesis and evaluation of the heterocyclic compounds has drawn more attention for the chemists and biologists over the years [3-10]. Azetidinones are four membered nitrogen containing heterocyclic's which are useful substrates in organic chemistry for the design and preparation of biologically active compounds by the adequate fictionalization in the different positions of the ring. The azetidinones are a part of antibiotic structure, figure 1 illustrates the general mechanism of its synthesis. Azetidinones posses various biological activities such as antibacterial [11-13], antifungal [14], anti-inflammatory [15-16], anti-

2019-2

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RESEARCH ARTICLE

Assesment of *In-Vitro* Antioxidant and Anti Inflammatory activity of Ethanolic Extract of *Colocasia Esculenta*

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ABSTRACT

Objective: To assess the *in vitro* antioxidant and anti-inflammatory activity of the ethanolic extract of *colocasia esculenta* **Methods:** *In vitro* antioxidant activity was evaluated for hydrogen peroxide scavenging assay, nitric oxide scavenging method, reducing power method and thiobarbituric method and in vitro anti-inflammatory activity is alos assessed by using inhibition of albumin denaturation method. **Results:** The ethanolic extract of *colocasia esculenta* shown hydrogen peroxide scavenging potential activity is 92.24% at 20µg/ml. The reducing power shows maximum activity shown 81.08% at 100µg/ml and the thio barbituric acid method shown maximum activity 98.4% at 100µg/ml. Ethanolic extract of *Colocasia esculenta* showed 95.56% inhibition of denaturation of albumin at 1000µg/ml concentration, while standard diclofenac showed 98.2% inhibition of denaturation of albumin. **Conclusion:** It can be concluded that ethanolic extract of *colocasia esculenta* shows good in vitro antioxidant and anti-inflammatory activities.

Keywords: Trapidil, sustained release, Guar gum, karaya gum and xanthan gum

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CONTENTS

1. Introduction

Oxidative stress is an imbalance in the redox status of a cell and the excessive production of free radicals can lead to damages, mutations and ultimately the formation of cancer. Ionizing radiation exposure can impact human health in different ways and cause a broad spectrum of adverse effects including anti-proliferative, pro-inflammatory and other biological effects. These effects are mainly due to