3.3.1. Number of papers published per teacher in the Journals notified on UGC website during the last five years.

Summary

Sr. No.	Sr. No. Parameter Academic	Year	No. of Research paper
1	**Research Paper Publications**	2018-19	42
2		2019-20	16
3		2020-21	21
4		2021-22	14
5		2022-23	20
Total Number of research papers published in the Journals notified on UGC CARE list during the last five years			**113**

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3.3.1. Number of papers published per teacher in the Journals notified on UGC Website during the last five years.

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Founder President

Hon. Mrs. M. R. Pharate
Founder Secretary

Dr. H. V. Kamble
Principal

Academic Year 2018-2019

Sr. no	Title of the paper	Name of Staff	Department	Name of the journal	ISSN number	Document	Link
1	Evaluation Of Some Natural Polymers As Pharmaceutical Excipient For Sustained Drug Delivery System	Mr. A. V. Dhobale	Pharmaceutics	International Journal Of Humanities And Social Science	E-ISSN 2348 – 1269	View Document	https://www.researchgate.net/publication/350782955_Evaluation_of_Some_Natural_Polymers_as_Pharmaceutical_Excipient_For_Sustained_Drug_Delivery_System
2	Recent Advances In Mucoadhesive Buccal Drug Delivery System And Its Marketed Scope And Opportunities	Mr. A. V. Dhobale	Pharmaceutics	International Journal Of Advanced Pharmaceutical Sciences	ISSN:2456 -8147	View Document	https://www.researchgate.net/publication/327111123_RECENT_ADVANCES_IN_MUCOADHESIVE_BUCCAL_DRUG_DELIVERY_SYSTEM_AND_ITS_MARKETED_SCOPE_AND_OPPORTUNITIES
3	Evaluation Of Antiulcer Activity Of Aconitum Heterophyllum On Experimental Animal	Mr. A. V. Dhobale	Pharmaceutics	World J Pharm Pharm Sci	ISSN 2278 – 4357	View Document	https://www.researchgate.net/publication/326837658_EVALUATION_OF_ANTIULCER_ACTIVITY_OF_ACONITUM_HETEROPHYLLUM_ON_EXPERIMENTAL_ANIMAL
4	Design And In-Vitro Characterization Of Gastroretentive Floating Tablets Containing Gliclazide	Mr. A. V. Dhobale	Pharmaceutics	World J Pharm Pharm Sci	ISSN 2278 – 4357	View Document	https://www.researchgate.net/publication/322307709_DESIGN_AND_IN-VITRO_CHARACTERIZATION_OF_GASTRORETENTIVE_FLOATING_TABLETS_CONTAINING_GLICLAZIDE
5	Mouth Dissolving Strips	Mr. A. V. Dhobale	Pharmaceutics	International Journal Of Advanced Pharmaceutical Sciences	ISSN: 2456-8147	View Document	https://www.researchgate.net/profile/Avinash-Dhobale-2
6	Formulation And Evaluation Of Fast Disintegrating Tablet Of Carvedilol.	Mr. A. V. Dhobale	Pharmaceutics	International Journal Of Pharmacy Pharmaceutical Sciences	ISSN 2349 7203	View Document	https://www.researchgate.net/publication/327690399_Formulation_and_Evaluation_of_Fast_Disintegrating_Tablet_of_Carvedilol
7	Evaluation Of Antiulcer Activity Of Aconitum Heterophyllum On Experimental Animal	Mr. A. V. Dhobale	Pharmaceutics	World Journal Of Pharmacy And Pharmaceutical Sciences	ISSN 2278 4357	View Document	https://www.researchgate.net/publication/326837658_EVALUATION_OF_ANTIULCER_ACTIVITY_OF_ACONITUM_HETEROPHYLLUM_ON_EXPERIMENTAL_ANIMAL
8	Formulation And Evaluation Of Atorvastatin Calcium Oral Dispersible Table	Mr. A. V. Dhobale	Pharmaceutics	International Journal Of Current Advanced Research	ISSN: O: 2319-6475, ISSN: P: 2319-6505,	View Document	https://www.researchgate.net/publication/326831851_FORMULATION_AND_EVALUATION_OF_ATORVASTATIN_CALCIUM_ORAL_DISPERSIBLE_TABLET
9	Formulation And Evaluation Of Carbamazepine Nanoemulsion For Brain Targeted Drug Delivery Via Intranasal Route	Mr. A. V. Dhobale	Pharmaceutics	Indo American Journal Of Pharmaceutical Research	ISSN NO: 2231-6876	View Document	https://www.researchgate.net/publication/326803830_FORMULATION_AND_EVALUATION_OF_CARBAMAZEPINE_NANOEMULSION_FOR_BRAIN_TARGETED_DRUG_DELIVERY_VIA_INTRANASAL_ROUTE

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11	Design, Development And Characterization Oflosartan Potassium Sustained Release Matrix Tablet	Mr. A. V. Dhobale	Pharmaceutics	World Journal Of Pharmacy And Pharmaceutical Scinces	ISSN 2278 – 4357	View Document	https://www.researchgate.net/publication/322308014_DESIGN_DEVELOPMENT_AND_CHARACTERIZATION_OF_LOSARTAN_POTASSIUM_SUSTAINED_RELEASE_MATRIX_TABLET
12	Design And In-Vitro Characterization Of Gastroretentive Floating Tablets Containing Gliclazide	Mr. A. V. Dhobale	Pharmaceutics	World Journal Of Pharmacy And Pharmaceutical Sciences	ISSN 2278 – 4357	View Document	https://www.researchgate.net/publication/322307709_DESIGN_AND_IN-VITRO_CHARACTERIZATION_OF_GASTRORETENTIVE_FLOATING_TABLETS_CONTAINING_GLICLAZIDE
14	Formulation And Evaluation Of Rosuvastatin Oral Dispersible Tablet Under A Creative Commons	Dr. V. M. Satpute	Pharmaceutics	International Journal Of Advanced Pharmacetical Sciences	ISSN:2456-8147	View Document	https://www.researchgate.net/publication/340262020_FORMULATION_AND_EVALUATION_OF_ROSUVASTATIN_ORAL_DISPERSIBLE_TABLET_under_a_Creative_Commons_Attribution_40
15	A Project On Human Papillomavirus-A Review Under A Creative Commons Attribution	Dr. V. M. Satpute	Pharmaceutics Pharmaceutics	International Journal Of Advanced Pharmaceutical Sciences	SSN:2456-8147	View Document	https://www.researchgate.net/publication/326571009_A_PROJECT_ON_HUMAN_PAPILLOMAVIRUS_-_A_REVIEW
16	Formulation And Evaluation Of Fast Disintegrating Tabletof Carvedilol	Dr. V. M. Satpute	Pharmaceutics	Human Journals IJPPR	ISSN 2349 7203	View Document	https://www.researchgate.net/publication/327690399_Formulation_and_Evaluation_of_Fast_Disintegrating_Tablet_of_Carvedilol
17	Isolation And Characterization Of Phytoconstituents From Petroleum Ether Extract Of Momordica Cochinchinensis Fruits	Mr. M. R. Agrawal	Pharmacognosy	Journal Of Pharmacognosy And Phytochemistry	E-ISSN: 2278-4136 P-ISSN: 2349-8234	View Document	https://rjpponline.org/AbstractView.aspx?PID=2020-12-3-6
18	Anti-Inflammatory Activity Of Momordica Cochinchinensis And Momordica Balsamina Fruit Extracts	Mr. M. R. Agrawal	Pharmacognosy	International Journal Of Green	DOI: 10.24214/IJGHC/HC/7/4/44655.	View Document	https://www.academia.edu/42305275/Analgesic_activity_of_Momordica_cochinchinensis_and_Momordica_balsamina_fruit_extracts
19	Analgesic Activity Of Momordica Cochinchinensis And Momordica Balsamina Fruit Extracts	Mr. M. R. Agrawal	Pharmacognosy	International Journal Of Gree Pharmacy	Vol 12(4)	View Document	https://www.academia.edu/42305275/Analgesic_activity_of_Momordica_cochinchinensis_and_Momordica_balsamina_fruit_extracts
20	Ameliorative Effects of Artemisia Pallens In A Murine Model of Ovalbumin-Induced Allergic Asthma Via Modulation of Biochemical perturbations	Ms. A. A. Mukherjee	Pharmacognosy	Biomedicine & Pharmacotherapy	Https://Doi.Org/10.1016/J.Fct.2018.08.028	View Document	https://pubmed.ncbi.nlm.nih.gov/28810518/#:~:text=Conclusion%3A%20Artemisia%20pallens%20simultaneously%20orchestrate,OVA%2Dinduced%20AHR%20in%20rats.

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22	Curcumin Ameliorates Vitamin A Deficiency-Induced Urolithiasis In Neonatal Rats Via Inhibition Of KIM-1/NGAL, Nrf2, And Inos Pathways	Ms. A. Kandhare	Pharmacology	Latin American Journal Of Pharmacy	ISSN 0326 2383 ISSN 2362-3853	View Document	https://www.researchgate.net/publication/331045453_Curcumin_ameliorates_vitamin_A_deficiency-induced_urolithiasis_in_neonatal_rats_via_inhibition_of_KIM-1NGAL_Nrf2_and_iNOs_pathways
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24	Low Molecular Weight Galactomannans-Based Standardized Fenugreek Seed Extract Ameliorates High-Fat Diet-Induced Obesity In Mice Via Modulation Of Fasn, IL-6, Leptin, And TRIP-Br_2	Ms. A. Kandhare	Pharmacology	RSC Advances	Rsc.Li/Rsc-Advances	View Document	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9086199/
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26	Add-On Therapy Of Herbal Formulation Rich In Standardized Fenugreek Seed Extract In Type 2 Diabetes Mellitus Patients With Insulin Therapy: An Efficacy And Safety Study	Ms. A. Kandhare	Pharmacology	Asian Pacific Journal Of Tropical Biomedicine 2018; 8(7): 352-359	ISSN 2221-1619	View Document	https://www.researchgate.net/publication/327910450_Add-on_therapy_of_herbal_formulation_rich_in_standardized_fenugreek_seed_extract_in_type_2_diabetes_mellitus_patients_with_insulin_therapy_An_efficacy_and_safety_study
27	Efficacy And Safety Of Herbal Formulation Rich In Standardized Fenugreek Seed Extract As Add-On Supplementation In Patients With Type 2 Diabetes Mellitus On Sulfonylurea Therapy: A 12-Week, Randomized, Double-Blind, Placebo-Controlled, Multi-Center Study			Pharmacognosy Magazine	ISSN : 0973-1296	View Document	https://www.researchgate.net/publication/327521981_Efficacy_and_safety_of_herbal_formulation_rich_in_standardized_fenugreek_seed_extract_as_add-on_supplementation_in_patients_with_type_2_diabetes_mellitus_on_sulfonylurea_therapy_A_12-week_randomized_d

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29	Hesperidin, A Plant Flavonoid Accelerated The Cutaneous Wound Healing In Streptozotocin-Induced Diabetic Rats: Role Of Tgf-B/Smads And Ang-1/Tie2			EXCLI Journal	ISSN 1611-2156	View Document	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5962903/
30	Anti-Allergic Potential Of Fisetin In A Murine Model Of Ova-Induced Allergic Rhinitis Via Inhibition Of Gata-3 And Th2 Cytokines Zhao L			Biomedica	Vol. 34, Issue 2, Apr. – Jun., 2018	View Document	https://www.google.com/search?q=Anti-Allergic+Potential+Of+Fisetin+In+A+Murine+Model+Of+Ova-Induced+Allergic+Rhinitis+Via+Inhibition+Of+Gata-3+And+Th2+Cytokines+Zhao+L+research+paper+by+amit+kandhare&rlz=1C1VDKB_en-GBIN1070IN1070&oq=Anti-Allergic+Potential+Of+Fisetin+In+A+Murine+Model+Of+Ova-Induced+Allergic+Rhinitis+Via+Inhibition+Of+Gata-3+And+Th2+Cytokines+Zhao+L+research+paper+by+amit+kandhare&gs_lcrp=EgZjaHJvbWUqBggAEEUYOzIGCAAQRRg7MgcIARAhGI8C0gEJMTAwOTNqMGo3qAIAsAIA&sourceid=chrome&ie=UTF-8#ip=1
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32	Fisetin, A Plant Flavonoid Ameliorates Doxorubicin-Induced Cardiotoxicity In Experimental Rats: The Decisive Role OfCaspase-3, COX-II, Ctn-I, Inos And TNF			Molecular Biology Reports	ISSN 0301-4851	View Document	https://ouci.dntb.gov.ua/en/works/7P2pwv0l/
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34	Development And Validation Of UV-Visible Spectroscopy Method For Simultaneous Estimation Of Saxagliptin Hydrochloride And Metformin Hydrochloride In Tablet Dosage Form	Mr. Pravin Cholke & Ms. Yogita Temak	Pharmaceutical Chemistry	International Journal Of Research In Pharmacy And Pharmaceutical Sciences	ISSN: 2455-698	View Document	https://www.pharmacyjournal.in/archives/2018/vol3/issue4/3-4-16

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36	"Formulation And Evaluation Of Carbamazepine Nanoemulsion For Brain Targeted Drug Delivery Via Intranasal Route"	Ms. S. A. Nagare	Pharmaceutical Chemistry	Indo American Journal Of Pharmaceutical Research	ISSN NO: 2231-6876	View Document	https://www.researchgate.net/publication/326803830_FORMULATION_AND_EVALUATION_OF_CARBAMAZEPINE_NANOEMULSION_FOR_BRAIN_TARGETED_DRUG_DELIVERY_VIA_INTRANASAL_ROUTE
37	Formulation And Evaluation Of Mouth Dissolving Tablet Of Bendroflumethiazide	Ms. A. A. Najan	Pharmaceutical Chemistry	International Journal Of Current Research	ISSN: 0975-833	View Document	https://scholar.google.co.in/scholar?q=Formulation+And+Evaluation+Of+Mouth+Dissolving+Tablet+Of+Bendroflumethiazide+research+paper+by+a.a.najan&hl=en&as_sdt=0&as_vis=1&oi=scholart
38	Curcumin Ameliorates Vitamin A Deficiency-Induced Urolithiasis In Neonatal Rats Via Inhibition Of KIM-1/NGAL, Nrf2, And Inos Pathways	Ms. A. A. Mukherjee	Pharmacology	Latin American Journal Of Pharmacy	ISSN 0326 2383 ISSN 2362-3853	View Document	https://www.researchgate.net/publication/331045453_Curcumin_ameliorates_vitamin_A_deficiency-induced_urolithiasis_in_neonatal_rats_via_inhibition_of_KIM-1NGAL_Nrf2_and_iNOs_pathways
39	Evaluation Of Health-Related Quality Of Life In Hemolytic Uraemic Syndrome Patients Treated With Eculizumab: A Systematic Evaluation On Basis Of EMPRO	Ms. A. A. Mukherjee		Taylor & Francis	ISSN: 1525-6049	View Document	https://pubmed.ncbi.nlm.nih.gov/29363392/
40	Hesperidin, A Plant Flavonoid Accelerated The Cutaneous Wound Healing In Streptozotocin-Induced Diabetic Rats: Role Of Tgf-B/Smads And Ang-1/Tie2			EXCLI Journal	ISSN 1611-2156	View Document	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5962903/

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Evaluation of Some Natural Polymers As Pharmaceutical Excipient For Sustained Drug Delivery System

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"Evaluation of Some Natural Polymers as Pharmaceutical Excipient For Sustained Drug Delivery System"

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ABSTRACT:

The use of natural polymer as excipients in pharmaceutical sector is expanding day by day. Low cost, safety issues, availability, bio-degradable are the main causes that make them differ from other sources. Natural sources have wide range of varieties and characteristics. Excipients facilitate the formulation design and perform a wide range of functions to obtain desired properties for the finished drug product. Polysaccharide hydrocolloids including mucilages, gums and glucans are abundant in nature and commonly found in many higher plants. Currently, various plant polysaccharides have been studied for their diverse applications as excipients like binders, granulating agents, disintegrants, emulsifiers, suspending agents, gelling agents, mucoadhesive agents, matrix-formers, release retardants, enteric resistants, these polysaccharides constitute a structurally diverse class of biological macromolecules with a broad range of physicochemical properties which are widely used for various applications in pharmacy and medicine.

Key Words: Excipients, Modification, Natural Polymer, Sustained Drug Release.Gums and Mucilages

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Recent Advances In Mucoadhesive Buccal Drug Delivery System And Its Marketed Scope And Opportunities

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RECENT ADVANCES IN MUCOADHESIVE BUCCAL DRUG DELIVERY SYSTEM AND ITS MARKETED SCOPE AND OPPORTUNITIES

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ABSTRACT

Extensive efforts have been focused on targeting a drug or drug delivery system in a particular region of the body for extended period of time, not only for local targeting of drug but also for better compliance of systemic drug delivery. Mucoadhesive characteristics are a factor of both the bioadhesive polymer and the medium in which the polymer will reside. Buccal dosage forms can be of Matrix or Reservoir types. However, this route could become a significant means for the delivery of a range of active agents in the coming years, if the barriers to buccal drug delivery are overcome. Mucoadhesive drug delivery system prolong the residence time of the dosage form at the site of application or absorption and facilitate an intimate contact of the dosage form with the underline absorption surface and thus contribute to improved and better therapeutic performance of the drug.

Buccal delivery involves the administration of the desired drug through the buccal mucosal membrane lining of the oral cavity. The objective of this article is to review buccal drug delivery by discussing the structure and enviorment of the oral mucosa and highlighting the mechanism of drug permeation and methodology in evaluating buccal formulations. This review also highlights a brief description of advantages, limitations of buccal drug delivery and theories of bioadhesion, mucoadhesive polymer, mechanism of buccal absorption along with mucoadhesive dosage form, factors affecting mucoadhesion.

Keywords: Mucosa, Mucoadhesion, Mucoadhesive Polymers, Mucoadhesive Drug Delivery System.

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Evaluation Of Antiulcer Activity Of Aconitum Heterophyllum On Experimental Animal

WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
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Volume 7, Issue 2, 819-839 Research Article ISSN 2278 – 4357

EVALUATION OF ANTIULCER ACTIVITY OF ACONITUM HETEROPHYLLUM ON EXPERIMENTAL ANIMAL

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ABSTRACT

In present era peptic ulcer is a worldwide problem and its prevalence is quite high in India. Some present data shows that in different part of India its occurrence is 4 to 10 % per thousand populations. The exact etiology of peptic ulcer is not known, the disease results in chronic suffering, loss of working hours and occasional fatality. Smoking habit, alcoholism, stress & spicy food make the severity of the disease which leads serious complication of ulcer. Aconitum heterophyllum is one of the most commonly use in different medical conditions has been documented. Traditionally, Aconitum heterophyllum roots or tubers are beneficial in the treatment of diseases related to lungs & airways, blood, skin, stomach, intestines, and liver. As no reports are available on the possible antiulcer effects of Aconitum heterophyllum. The present work was carried out to antiulcer activity of Aconitum heterophyllum by cold stress induced gastric ulcers in wister albino Test drug Aconitum heterophyllum (low dose) and Aconitum heterophyllum (high dose) have shown result in comparison to standard drug omeparazole and control drug. Thus study has provided documentary evidence for antiulcer property of Aconitum heterophyllum for its activity.

KEYWORDS: Aconitum heterophyllum, peptic ulcer, antiulcer property.

INTRODUCTION

Charaka made fifty groups of ten herbs each of which, according to him, would suffice an ordinary physician's need. Similarly, Sushrutha arranged 760 herbs in 7 distinct sets based on their common properties. A large portion of the Indian population even today, depends on the

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Design And In-Vitro Characterization Of Gastroretentive Floating Tablets Containing Gliclazide

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SJIF Impact Factor 6.647
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DESIGN AND IN-VITRO CHARACTERIZATION OF GASTRORETENTIVE FLOATING TABLETS CONTAINING GLICLAZIDE

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ABSTRACT

The current work is aimed to design a novel oral gastroretentive floating tablets of Gliclazide by using combination of HPMC, carbopole 934 (CP) and guar gum (GG) for safe and effective management of non-insulin dependent (Type II) diabetes mellitus for better control of blood glucose level by enhancing its oral bioavailability and also to improve the patient compliance. The floating tablets containing 50mg of Gliclazide was prepared by direct compression technology. All the tablet formulations were evaluated for physical properties; total buoyancy and buoyancy lag time and in vitro drug release studies in pH 1.2 buffer solution. All the tablets prepared with GG / CBP alone and their combination as matrix material fails to meet the requirements of desired floating ability, sustaining and complete drug release. Among the various ratios (5:1, 4:2 and 3:3) of HPMC:GG, the ratio 3:3 meets the desired requirement (floated for 12h with a floating lag time of 30sec) and released major portion of the drug (98.64%) in 12h. The tablet formulation containing HPMC and CBP, the ratio 4:2 was found to be suitable for designing floating tablets as it has shown less floating lag time (43sec), floated for the testing period of 12h and released 97.925 of Gliclazide. The optimized tablet batch formulations showed no change in drug content or in vitro release pattern after storage at 40° C / 75% RH for 30 days. The FTIR studies ruled out incompatibility between the drug (Gliclazide) and non drug components used in the tablets.

KEYWORDS: Gliclazide, carbopole, guar gum, FDDS, gastric residence time, diabetes mellitus.

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Mouth Dissolving Strips

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Mouth dissolving strips– a review

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ABSTRACT

In the recent years most useful route of drug delivery system is the oral route in all types of patient. Mouth dissolving strips is the type of drug delivery system which when placed in the oral cavity, disintegrate or dissolve within few seconds without the intake of water. The advantages of mouth dissolving strips are the administration to pediatric and geriatric patient. This technology has been used for local action, rapid release products.These films have a potential to deliver the drug systemically through intragastric, sublingual or buccal route of admin-istration and also has been used for local action. The mouth dissolving strips are available in various shapes, size and thickness.This article is an overview of mouth dissolving strips encompassing materials used in mouth dissolving strips, manufacturing process, applications, business technologies and future business prospects of this technology

Keywords: Strips, Mouth Dissolving Strips, Rapid Release. Dose, Drug delivery

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Formulation And Evaluation Of Fast Disintegrating Tablet Of Carvedilol

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Formulation and Evaluation of Fast Disintegrating Tablet of Carvedilol

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Keywords: FDT, Carvedilol, Disintegration, Lyophilization, Dimethylsulphoxide

ABSTRACT

The oral route of administration is considered as the most widely accepted route because of its convenience of self-administration, compactness and easy manufacturing. Fast disintegrating tablets (FDT) has enormously increased as it has significant impact on the patient compliance some novel FDT technology allows high drug loading, have an acceptable taste, offer a pleasant mouth felling, leaving minimal residue in the mouth after oral administration. FDT have been investigated for their potential in improving bioavailability of poorly soluble drug through enhancing the dissolution profile of the drug and hepatic metabolism drugs. The present study was carried out to design and evaluation of fast disintegrating tablets of carvedilol for the effective management of angina pectoris, hypertension etc. In view of substantial first pass effect and its shorter plasma half-life. The fast disintegrating tablets of carvedilol were prepared by enhancing the solubility of carvedilol using β-cyclodextrin solid dispersion technology. Solubility of carvedilol is enhanced by preparing solid dispersion with β-cyclodextrin 1:4 ratio. DSC and IR spectroscopy data showed the characterization of drug, excipient, compatibility of drug and solid dispersion with excipients, gave evidence of solid dispersion formation and UV absorption spectra shows enhancement of solubility. Various preformulation batches (f1-f10) formulated by direct compression method using different concentration of polymer such as ac-di-sol and pearlitol and it was studied for pre and post compression evaluation. formulation with AC-DI-SOL and pearlitol batch no. F9 shows excellent result with disintegration time of 105 sec, drug content of 99.35%, and greater dissolution rate 98.32%at 40 min.

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Evaluation Of Antiulcer Activity Of Aconitum Heterophyllum On Experimental Animal

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EVALUATION OF ANTIULCER ACTIVITY OF ACONITUM HETEROPHYLLUM ON EXPERIMENTAL ANIMAL

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ABSTRACT

In present era peptic ulcer is a worldwide problem and its prevalence is quite high in India. Some present data shows that in different part of India its occurrence is 4 to 10 % per thousand populations. The exact etiology of peptic ulcer is not known, the disease results in chronic suffering, loss of working hours and occasional fatality. Smoking habit, alcoholism, stress & spicy food make the severity of the disease which leads serious complication of ulcer. Aconitum heterophyllum is one of the most commonly use in different medical conditions has been documented. Traditionally, Aconitum heterophyllum roots or tubers are beneficial in the treatment of diseases related to lungs & airways, blood, skin, stomach, intestines, and liver. As no reports are available on the possible antiulcer effects of Aconitum heterophyllum. The present work was carried out to antiulcer activity of Aconitum heterophyllum by cold stress induced gastric ulcers in wister albino Test drug Aconitum heterophyllum (low dose) and Aconitum heterophyllum (high dose) have shown result in comparison to standard drug omeparazole and control drug. Thus study has provided documentary evidence for antiulcer property of Aconitum heterophyllum for its activity.

KEYWORDS: Aconitum heterophyllum, peptic ulcer, antiulcer property.

INTRODUCTION

Charaka made fifty groups of ten herbs each of which, according to him, would suffice an ordinary physician's need. Similarly, Sushrutha arranged 760 herbs in 7 distinct sets based on their common properties. A large portion of the Indian population even today, depends on the

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Formulation And Evaluation Of Atorvastatin Calcium Oral Dispersible Table

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Research Article

FORMULATION AND EVALUATION OF ATORVASTATIN CALCIUM ORAL DISPERSIBLE TABLET

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Atorvastatin Calcium, oral dispersible , Crospovidone, direct compression method.

ABSTRACT

The objective of the study was to develop the oral dispersible tablets of various concentrations of polymers on in-vitro release rate from the prepared Atorvastatin calcium tablets. The effect of drug to polymer ratio on the in vitro drug release behavior was significant. Formulation F5 showed better in vitro drug release and this indicates the ideal drug, polymer and excipients combination formulations. In vitro dissolution results showed that maximum cumulative % drug release was more in formulation F5 when compared to formulation F1 to F9.Stability studies were conducted formulations F5 stored at 250C/60% RH and 400C/75% RH for 30 days. Various parameters like hardness, friability, drug content uniformity, in vitro disintegration, wetting time were analyzed at a time of interval of 10 days till a period of 30 days. Not much variation or change was observed in any parameters throughout the study period. Best –selected formulations F5 found to be stable. Hence it is concluded that The prepared tablets disintegrate in seconds without need of water and enhance the absorption, this leads to increased bioavailability of Atrovastatin calcium.
The results of stability study on Formulation F5 after a period of one month indicates that the formulation was stable. Based on result it is concluded that formulated oral dispersible tablet of atrovastatin may have wide acceptance as compared to conventional dosage form.

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INTRODUCTION

Solid medicaments may be administered orally as powders, pills, cachets, capsules or tablets. These dosage forms contain a quantity of drug which is given as a single unit and they are known collectively as solid unit dosage forms, even in the case of sustained action preparations which, technically, contain the equivalent of several normal doses of drug.

The treatment of acute or chronic illness has been achieved by delivery of drug to the patients for many years. These drug delivery systems include capsules, tablets, injectables, creams, liquids, aerosol, suspensions and ointments. The term drug delivery can be defined as technique that is used to get therapeutic agent inside the human body. [2,3]

Oral drug delivery has been known for decades as the most widely utilized route of administration among all the routes that have been explored for the systemic delivery of drugs via different dosage forms. Oral routes of drug administration have wide acceptance up to 50-60% of total dosage forms. Solid dosage forms are popular because of ease of administration, accurate dosage, self medication, pain avoidance and most importantly the patient compliance.

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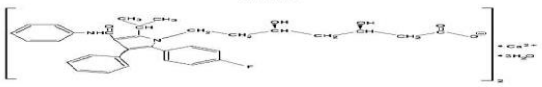
The most popular solid dosage forms are being tablets and capsules.

Atorvastatin Calcium Structure



MATERIALS AND METHODS

Gift samples of standards Atorvastatin Calcium were provided Wokhardt Pharmaceutical at, Aurangabad. Crospovidone, Croscarmellose sodium, Sodium starch glycolate, Lactose, Microcrystalline cellulose, Magnesium Stearate, were provided Lupin Pharmaceutical at, Aurangabad.

Formulation of Orally Disintegrating Tablets

Weigh all the ingredients accurately according. Mix all the ingredients geometrically except Talc and Magnesium Stearate. Then lubricate the blend with Talc, Magnesium Stearate and passed through sieve no 40 .The blend was compressed using rotary tablet machine-10 station with 6mm flat punch. Each tablet contains 10mg Atrovastatin and other pharmaceutical ingredients as in Table no 1.

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Formulation And Evaluation Of Carbamazepine Nanoemulsion For Brain Targeted Drug Delivery Via Intranasal Route

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INDO AMERICAN JOURNAL OF PHARMACEUTICAL RESEARCH

"FORMULATION AND EVALUATION OF CARBAMAZEPINE NANOEMULSION FOR BRAIN TARGETED DRUG DELIVERY VIA INTRANASAL ROUTE"

Nagare Sonali .A*, Dhobale Avinash.V, Najan Anita.A
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Carbamazepine,
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ABSTRACT
Intranasal drug administration is receiving increased attention as adelivery method for by-passing the blood–brain barrier and rapidly targeting therapeutics to the brain or CNS. The objective of the present study was to selected carbamazepine nanoemulsion for nose-to-brain delivery. Carbamazepine nanoemulsion (NE) formulation were successfully prepared by the spontaneous emulsification method (titration method) using Capmul MCM as the oil, Tween-80 as surfactant, and PEG-600 as co-surfactant phase on the basis of solubility studies. The nanoemulsion formulation containing 7.35% oil, 66.18% Smix ratio (3:1 Tween-80:PEG-600 ratio),26.47% (v/v) aqueous phase that displayed an optical transparency of 99.42±0.81%, globule size of 71.70±3.06 nm, and polydispersity index of 0.256±0.002. The selected Carbamazepine nanoemulsion was characterized, and the *in-vitro* drug release and *in-vivo* nasal absorption of drug from the selected formulation were evaluated in rats. *In-vitro* and ex vivo permeation studies showed an initial burst of drug release at 60 min and Carbamazepine nanoemulsion show drug release up to 5 h. In vivo pharmacokinetic studies in rats showed that Carbamazepine.

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Recent Advances In Pilot Plant Scale Up Techniques

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RECENT ADVANCES IN PILOT PLANT SCALE UP TECHNIQUES - A Review

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Pilot Plant Technique,
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ABSTRACT
Pilot scale up techniques for solid dosage form will provide guide line forthe manufacture of large scale process and this will play a pivotal role inlarge scale manufacturing. The parameters such as granulation feed rate,compression parameters, temperature and rate of drying will have acritical role in development of any solid dosage form.Pilot plant is a relative term in the sense that pilot plants are typically smaller than full-scale production plants, but are built in a range of sizes. Also, as pilot plants are intended for learning, they typically are more flexible, possibly at the expense of economy. Some pilot plants are built in laboratories using stock lab equipment, The past two decades particular have witnessed amazing inventions and innovations in pharmaceutical research, resulting in the ability to produce new drugs faster than even before. The new drug applications (NDAs) and abbreviated new drug applications (ANDA) are all-time high. The preparation of several clinical batches in the pilot plant provides its personnel with the opportunity to perfect and validate the process.

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Design, Development And Characterization Oflosartan Potassium Sustained Release Matrix Tablet

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DESIGN, DEVELOPMENT AND CHARACTERIZATION OF LOSARTAN POTASSIUM SUSTAINED RELEASE MATRIX TABLET

Avinash V. Dhobale[1*], Arun M. Mahale[1], Mrunal K. Shirsart[2], Deepak A. Joshi[3], Gunesh N. Dhembre[4] and Mahesh M. Thakare[5]

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ABSTRACT

The aim of this research work was to formulate and develop a fixed Dose Combination product in a two different strength using same blend for both the strengths of tablet as a SR tablet formulation. In the tablet, Extended Release layer consist of Antihypertensive Drug belonging to class β-selective adrenergic blocking agent without partial agonist or membrane stabilizing properties. Extended release preparation provides sustained release and reduces the chances of tough related side effects. In selected cases of extended release preparation of this drug used in treatment of hypertension and congestive heart failure. The clinical studies have shown beneficial role of this drug as an extended release preparation. The main objective of the present study was to develop, formulate and evaluate a matrix tablet by using hydrophilic natural retardant polymers which would retard drug release in upper GI tract and should start releasing the drug when it reaches the alkaline environment of small intestine. Metolose 90 sh and xanthan gum were investigated as the model hydrophilic retardant polymers. Wet granulation method was used for preparation of sustained release matrix tablets. Nine batches of tablets were prepared. The prepared tablets were subjected for pharmacopoeial and non-pharmacopoeial evaluation parameters including loose and tapped bulk density, compressibility index, hausner ratio, angle of repose, friability, hardness, thickness, weight variation, % drug content and in-vitro drug release studies. It can be concluded that the combination of hydrophilic polymers that are retardant in nature are better suited for sustained and controlled drug delivery system than the hydrophilic polymer alone.

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Design And In-Vitro Characterization Of Gastro retentive Floating Tablets Containing Gliclazide

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DESIGN AND IN-VITRO CHARACTERIZATION OF GASTRORETENTIVE FLOATING TABLETS CONTAINING GLICLAZIDE

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ABSTRACT

The current work is aimed to design a novel oral gastroretentive floating tablets of Gliclazide by using combination of HPMC, carbopole 934 (CP) and guar gum (GG) for safe and effective management of non-insulin dependent (Type II) diabetes mellitus for better control of blood glucose level by enhancing its oral bioavailability and also to improve the patient compliance. The floating tablets containing 50mg of Gliclazide was prepared by direct compression technology. All the tablet formulations were evaluated for physical properties; total buoyancy and buoyancy lag time and in vitro drug release studies in pH 1.2 buffer solution. All the tablets prepared with GG / CBP alone and their combination as matrix material fails to meet the requirements of desired floating ability, sustaining and complete drug release. Among the various ratios (5:1, 4:2 and 3:3) of HPMC:GG, the ratio 3:3 meets the desired requirement (floated for 12h with a floating lag time of 30sec) and released major portion of the drug (98.64%) in 12h. The tablet formulation containing HPMC and CBP, the ratio 4:2 was found to be suitable for designing floating tablets as it has shown less floating lag time (43sec), floated for the testing period of 12h and released 97.925 of Gliclazide. The optimized tablet batch formulations showed no change in drug content or in vitro release pattern after storage at 40° C / 75% RH for 30 days. The FTIR studies ruled out incompatibility between the drug (Gliclazide) and non drug components used in the tablets.

KEYWORDS: Gliclazide, carbopole, guar gum, FDDS, gastric residence time, diabetes mellitus.

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Formulation And Evaluation Of Rosuvastatin Oral Dispersible Tablet Under A Creative Commons

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FORMULATION AND EVALUATION OF ROSUVASTATIN ORAL DISPERSIBLE TABLET

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ABSTRACT

The objective of the study was to develop the oral dispersible tablets of various concentrations of polymers on in-vitro release rate from the prepared rosuvastatin tablets. The effect of drug to polymer ratio on the in vitro drug release behavior was significant. Formulation F5 showed better in vitro drug release and this indicates the ideal drug, polymer and excipients combination. Formulations In vitro dissolution results showed that maximum cumulative % drug release was more in formulation F5 when compared to formulation F1 to F9.Stability studies were conducted formulations F5 stored at 250C/60% RH and 400C/75% RH for 30 days. Various parameters like hardness, friability, drug content uniformity, in vitro disintegration, wetting time were analyzed at a time of interval of 10 days till a period of 30 days. Not much variation or change was observed in any parameters throughout the study period. Best –selected formulations F5 found to be stable. Hence it is concluded that the prepared tablets disintegrate in seconds without need of water and enhance the absorption, this leads to increased bioavailability of Rosuvastatin.

The results of stability study on Formulation F5 after a period of one month indicates that the formulation was stable. Based on result it is concluded that formulated oral dispersible tablet of Rosuvastatin may have wide acceptance as compared to conventional dosage form.

Key Words: Rosuvastatin, Oral dispersible, Crospovidone, Direct Compression Method.

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A Project on Human Papillomavirus-A Review Under A Creative Commons Attribution

International Journal of Advanced Pharmaceutical Sciences, Volume 1, Issue 04, Page 51-66
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A PROJECT ON HUMAN PAPILLOMAVIRUS - A REVIEW

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ABSTRACT

Human Papilloma Viruses (HPV) are the etiological agents of cervical and different ano-genital malignancies. Over 100 differing kinds of HPVs are familiar up to now, and each one target epithelial tissues for infection. one-third of HPV varieties specifically infect the genital tract and a group of these is that the activating agents of anogenital cancers. different HPV varieties that infect the sex organ tract induce benign hyperproliferative lesions or sex organ warts. Around eightieth of sexually active men and ladies will contract the HPV virus at some levels throughout their lifetime. Annually there are 14 million new diagnosed cases of HPV. There are additional or less 79 million men/women actively infected with the virus at any purpose in time. The productive life cycle of HPV is connected to tissue differentiation. HPV virus affects the basal cells of stratified epithelia. It then establishes their genomes as a multicopy nuclear episome. In these cells, viral DNA is replicated in conjunction with cellular chromosomes. Following biological process one among the female offspring cells migrates removed from the basal layer and undergoes differentiation. Particle production is restricted to differentiated cells. The infected basal cells can survive for up to several decades or until and unless the system clears the infection. The L1 and L2 proteins kind polyhedron capsids for offspring particle generation. The characterization of the cellular targets of these organism proteins and thus the mechanisms control the differentiation-dependent organism life cycle stay active are for the study of these important human pathogens. This review deals with numerous aspects of Human Papilloma Viruses (HPV)

Keywords: Cancer, HPV, Cervix, Proteins, Infection, Warts

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Formulation And Evaluation Of Fast Disintegrating Tablet of Carvedilol

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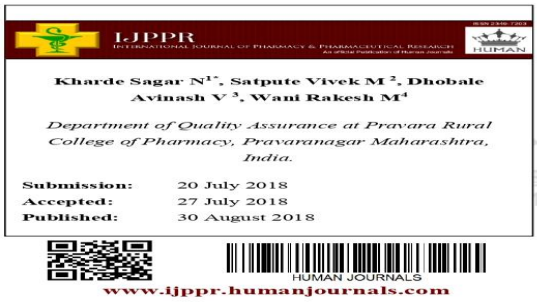
Formulation and Evaluation of Fast Disintegrating Tablet of Carvedilol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HUMAN

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Keywords: FDT, Carvedilol, Disintegration, Lyophilization, Dimethylsulphoxide

ABSTRACT

The oral route of administration is considered as the most widely accepted route because of its convenience of self-administration, compactness and easy manufacturing. Fast disintegrating tablets (FDT) has enormously increased as it has significant impact on the patient compliance some novel FDT technology allows high drug loading, have an acceptable taste, offer a pleasant mouth felling, leaving minimal residue in the mouth after oral administration. FDT have been investigated for their potential in improving bioavailability of poorly soluble drug through enhancing the dissolution profile of the drug and hepatic metabolism drugs. The present study was carried out to design and evaluation of fast disintegrating tablets of carvedilol for the effective management of angina pectoris, hypertension etc. In view of substantial first pass effect and its shorter plasma half-life. The fast disintegrating tablets of carvedilol were prepared by enhancing the solubility of carvedilol using β-cyclodextrin solid dispersion technology. Solubility of carvedilol is enhanced by preparing solid dispersion with β-cyclodextrin 1:4 ratio. DSC and IR spectroscopy data showed the characterization of drug, excipient, compatibility of drug and solid dispersion with excipients, gave evidence of solid dispersion formation and UV absorption spectra shows enhancement of solubility. Various preformulation batches (f1-f10) formulated by direct compression method using different concentration of polymer such as ac-di-sol and pearlitol and it was studied for pre and post compression evaluation. formulation with AC-DI-SOL and pearlitol batch no. F9 shows excellent result with disintegration time of 105 sec, drug content of 99.35%, and greater dissolution rate 98.32%at 40 min.


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Isolation And Characterization Of Phytoconstituents From Petroleum Ether Extract Of Momordica Cochinchinensis Fruits

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Isolation and characterization of phytoconstituents from petroleum ether extract of *Momordica cochinchinensis* fruits

Mohan Agrawal, Dr. Anilkumar Aher, Dr. Subodh Pal and Dr. Deelip Derle

Abstract
The purpose of the study is to isolate and characterize the chemical constituents from fruits of *Momordica cochinchinensis*. The principal theme of the study is to develop applied chromatographic techniques for the separation, isolation and detection of the compounds. The petroleum ether extract of fruits of *Momordica cochinchinensis* was saponified and unsaponifiable matter was subjected to column chromatography and elution of column was carried out by Petroleum ether (100%) with increasing concentration of ethyl acetate for the separation of phytoconstituents. The isolated compounds were characterized and analyzed by physical characteristics, IR, NMR and Mass spectroscopy. Three known compounds lupeol, β-amyrin and β-sitosterol were determined for the first time from fruits of *Momordica cochinchinensis*. From the present study, it is concluded that the plant consists of phytosterols which can be isolated and characterized by chromatographical and spectroscopical method.

Keywords: *Momordica cochinchinensis,* phytosterols, lupeol, β-amyrin and β-sitosterol

Introduction
From thousands of years Natural products have been used by human societies. Natural sources have provided considerable value to the pharmaceutical industry over the past half century. Research studies leading to extraction, isolation and biological study of plant constituents have formed the major field of study. Various leads from plant sources were taken for discovering the new active therapeutic agents. Hence herbal medicine has played important role in managing the health conditions like diabetes, hypertension, inflammation, obesity, cancer, etc [1].
The plant *Momordica cochinchinensis* (Gac) is a Southeast Asian fruit found throughout the region from Southern China to Northeastern Australia, mostly Vietnam and throughout India. It grows on dioecious vines and usually collected from fence climbers or from wild plants [2]. It is reported that *Momordica cochinchinensis* Spreng, is one of the special fruits containing extraordinarily high levels of carotenoids, especially β -carotene (more than 16 mg/100 g) and lycopene (more than 50 mg/100 g), mainly in the red aril [3]. It is also reported to contain a protein that may inhibit the proliferation of cancer cells and also β-carotene with several phytonutrients, Vit-E, fatty acids, carbohydrates, flavonoidal glycosides [4].
Traditionally, Gac has been used as both food and medicine and promotes healthy vision by relief of dry eyes. It also possesses antioxidant, anti-microbial and antidiabetic properties. The seeds are considered to be good for cough and pains in the chest [5, 6].
But these studies are not enough for identifying and characterizing the bioactive compounds in the plant. The purpose of the study is to identify and characterize the bioactive principles from fruits of *Momordica cochinchinensis*.

Materials and Methods
Plant material: The fruits of *Momordica cochinchinensis* was collected from rural area of Kolkata. The herbarium of the *Momordica cochinchinensis* was authenticated by Botanical Survey of India, Pune Voucher specimen (MA 01) was deposited in library.

Preparation of Extracts: Fruits of *Momordica cochinchinensis* was extracted by Soxhlet extractor with Pet ether and macerated with ethanol and water successively.

Storage of Extracts: All the extracts were stored in tightly closed glass bottles in refrigerator at 2-8 ^{o}C.

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Anti-Inflammatory Activity Of Momordica Cochinensis & Momordica Balsmina Fruit Extracts

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Anti-inflammatory activity of *Momordica cochinchinensis* and *Momordica balsamina* fruit extracts

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Abstract: In the present study fruit extracts of *Momordica cochinchinensis* and *Momordica balsamina* (Cucurbitaceae) were investigated for anti-inflammatory activity by Carrageenan induced hind paw edema and cotton pellet granuloma animal model. The extracts were prepared successively using powdered material with Petroleum ether, Ethanol and Water, concentrated under vacuum and were evaluated for anti-inflammatory activity at three dose level (100, 200 and 400 mg/kg). In Carrageenan-induced paw edema method, oral administration of Petroleum ether extracts of both the plants at the dose of 100 ($p < 0.05$), 200 ($p < 0.01$) and 400 mg/kg ($p < 0.001$) significantly inhibited the edema formation. The highest percentage inhibition 47.36 % and 63.06 % at sixth hour was shown by petroleum ether extract of both plants at the dose of 400 mg/kg respectively. In cotton pellet granuloma method, Pet ether extract at the dose of 100 ($p<0.05$), 200 and 400 mg/kg ($p<0.01$) of both plant material have shown significant anti-inflammatory activity and was comparable to standard drug Diclofenac (10 mg/kg) in reducing the granuloma formation. It is concluded that Pet ether extracts of both plant material have significant anti-inflammatory effect, may be attributed to

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Analgesic Activity of Momordica Cochinensis & Momordica Balsmina Fruit Extracts

ORIGINAL ARTICLE

Analgesic activity of *Momordica cochinchinensis* and *Momordica balsamina* fruit extracts

Mohan R. Agrawal[1]*, Anilkumar N. Aher[2], Subodh C. Pal[2], Deelip V. Derle[2]

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Abstract

Introduction: In the present study, fruit extracts of *Momordica cochinchinensis (Cucurbitaceae)* and *Momordica balsamina (Cucurbitaceae)* were investigated for analgesic activity by Eddy's hot plate and Tail immersion method. **Materials and Methods:** The extracts were prepared successively using powdered material with petroleum ether, ethanol, and water, and concentrated under vacuum and were evaluated for analgesic activity at three dose level (100, 200, and 400 mg/kg). **Results and Discussion:** In Eddy's hot plate method, oral administration of petroleum ether extracts of both the plants at the dose of 200 mg/kg ($P < 0.01$) and 400 mg/kg ($P < 0.001$) significantly reduced the thermal stimulation. Analgesic activity of petroleum ether extracts of both plants at the dose of 400 mg/kg after 90 min was comparable to standard drug pentazocine (10 mg/kg). In tail immersion method, petroleum ether extract at the dose of 100 mg/kg ($P < 0.05$), 200 mg/kg, and 400 mg/kg ($P < 0.01$) and alcoholic extract at the dose of 200 mg/kg and 400 mg/kg ($P < 0.05$) of both plant material has shown significant analgesic activity and was comparable to standard drug pentazocine (10 mg/kg) after 90 min. **Conclusion:** It is concluded that petroleum ether extracts of both plant material have central analgesic effects.

Key words: Analgesic activity, Eddy's hot plate, *Momordica balsamina*, *Momordica cochinchinensis*, phytosterols, tail immersion

INTRODUCTION

Momordica is a genus of about 60 species of annual or perennial climbers herbaceous or rarely small shrubs belonging to the family Cucurbitaceae, natives of tropical and subtropical Africa, Asia and Australia.[1,2]

Momordica cochinchinensis (Gac) is a Southeast Asian fruit found throughout the region from Southern China to Northeastern Australia, mostly Vietnam and throughout India. It grows on dioecious vines and is usually collected from fence climbers or wild plants. The vines can be commonly seen growing on lattices at the entrances to rural homes or in gardens. It bears fruits annually and is found in local markets. The fruit becomes a dark orange color on ripening, and is typically round or oblong, maturing to a size of about 13 cm in length and 10 cm in diameter. The exterior skin is covered in small spines, while dark red interior consists of clusters of fleshy pulp and seeds.[3] Gac fruit, *M. cochinchinensis* Spreng, is one of the special fruits containing extraordinarily high levels of carotenoids, especially β-carotene (>16 mg/100 g), and lycopene (>50 mg/100 g), mainly in the red aril.[4] Conventionally, Gac has been used as both food and medicine and promotes healthy vision by relief of dry eyes. It also possesses antioxidant, antimicrobial, and antidiabetic properties. The seeds are considered to be good for cough and pains in the chest.[5-7]

Momordica balsamina Family: Cucurbitaceae is climber with bright green leaves bears striking orange to red spindle-shaped ripe fruit. Shurb is fairly common and widespread in Malaya, Australia, West Asia, Africa, America, and India (Sind, Gujarat, and Deccan). Conventionally used as a purgative agent, purification of blood and dissipate

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Ameliorative Effects Of Artemisia Pallens In A Murine Model of Ovalbumin-Induced Allergic Asthma Via Modulation of Biochemical perturbations

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Biomed Pharmacother. 2017 Oct;94:880-889. doi: 10.1016/j.biopha.2017.08.017. Epub 2017 Aug 16.

Ameliorative effects of Artemisia pallens in a murine model of ovalbumin−induced allergic asthma via modulation of biochemical perturbations

Anwesha A Mukherjee [1], Amit D Kandhare [1], Supada R Rojatkar [2], Subhash L Bodhankar [3]

Affiliations

PMID: 28810518 DOI: 10.1016/j.biopha.2017.08.017

Abstract

Introduction: Asthma is a chronic, heterogeneous airway disorder characterized by airway inflammatory and remodeling. Artemisia pallens has been reported to possess antioxidant, anti-inflammatory and Anti-allergic potential.

Objective: To evaluate the anti-asthmatic effects of methanolic extract of Artemisia pallens (APME) against ovalbumin (OVA)-induced airway hyperresponsiveness (AHR) in rats.

Materials and method: AHR was induced in male Sprague-Dawley rats (180-200g) by intraperitoneal (i.p.) injection of OVA and boosted with an identical OVA solution (s.c.) on day 7. Rats were either treated orally with vehicle (10mg/kg), montelukast (10mg/kg) or APME (100, 200 and 400mg/kg) for next 28days. At the end treatments, various biochemical, molecular (RT-PCR and ELISA analysis) and histological parameters were evaluated.

Results: APME (200 and 400mg/kg) significantly attenuated ($p<0.05$) OVA-induced alteration in lung functions measured by Whole-body plethysmography. Increased Bronchoalveolar Lavage (BAL) fluid differential cell count, as well as total protein and albumin in BAL fluid and lungs, was significantly decreased ($p<0.05$) by APME. It also significantly attenuated ($p<0.05$) elevated lung oxido-nitrosative stress, myeloperoxidase, and serum IgE levels. OVA-induced down-regulation in lung Nrf2 and upregulation in TNF-α, IL-1β, IL-4, IL-6, TGF-β mRNA expression was significantly attenuated ($p<0.05$) by APME (200 and 400mg/kg) treatment. Histopathological analysis of lung tissue showed that APME treatment reduced OVA-induced inflammatory influx and fibrosis.

Conclusion: Artemisia pallens simultaneously orchestrate plethora of mechanisms viz. modulations of IgE, TGF-β, TNF-α, IL's and Nrf-2 levels to exhibit its anti-asthmatic potential in OVA-induced AHR in rats.

Keywords: Airway hyperresponsiveness; Artemisia pallens; Asthma; IL's; IgE; Nrf-2; Ovalbumin; TGF-β; TNF-α.

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Evaluation of Health-Related Quality Of Life In Hemolytic Uraemic Syndrome Patients Treated With Eculizumab: A Systematic Evaluation On Basis Of EMPRO

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Evaluation of health-related quality of life in hemolytic uraemic syndrome patients treated with eculizumab: a systematic evaluation on basis of EMPRO

Anwesha A. Mukherjee, Amit D. Kandhare, and Subhash L. Bodhankar

Abstract

Background: Hemolytic uraemic syndrome (HUS) is progressive renal failure disease and determination of their quality of life (QoL) on the basis of patient-reported outcomes (PROs) are becoming increasingly important in the economic evaluations for its treatment with eculizumab (ECU).

Aim: To perform the systematic evaluation of QoL in HUS patients treated with ECU on the basis of Evaluating Measures of Patient Reported Outcomes (EMPRO) tool.

Materials and methods: A systematic review was conducted in PubMed, EMBASE, the Cochrane Library, CINAHL and Google Scholar till September 2016 by two independent researchers. Each identified instrument was evaluated for its quality of performance by using the EMPRO tool for its overall score and seven attribute specific scores (range 0–100, worst to best).

Results: Five different PROs instruments were identified from 10 articles ($n = 112$) which showed eculizumab significantly improves health-related quality of life (HRQOL) in atypical HUS (aHUS) patients. Amongst five instruments viz. EuroQol five dimensions questionnaire (EQ-5 D) Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F), Headache Impact Test-6 (HIT-6), 36-Item Short Form Health Survey (SF-36) and Visual Analogue Scale (VAS), the overal EMPRO score was higher for VAS (73.83) and EQ-5 D (73.81). Whereas, FACIT-F and HIT- 6 were just able to meet the minimal threshold of EMPRO scoring (50.24 and 59.09, respectively)

Conclusions: Evidence from present investigation support that eculizumab significantly proves HRQoL in patients with aHUS furthermore, EQ-5 D and VAS instrument should be ommended for assessing HRQoL in them. However, selection of PRO instrument for dete

Feedback
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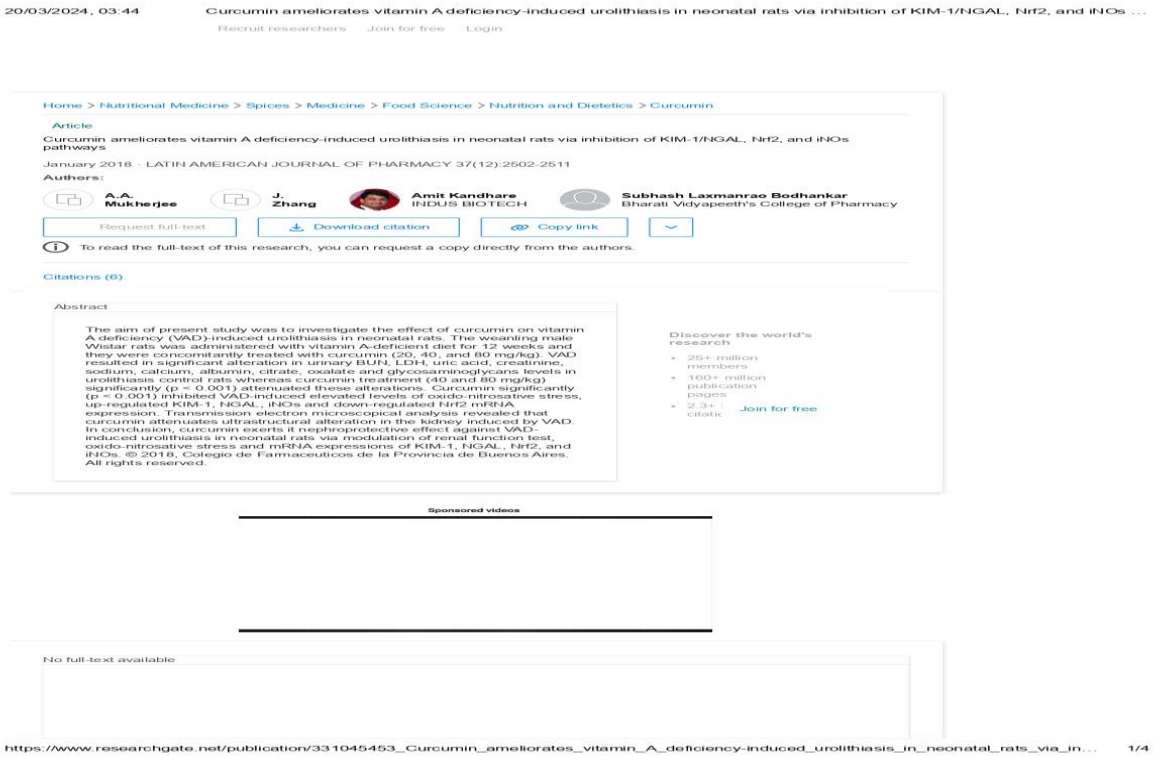
Curcumin Ameliorates Vitamin A Deficiency-Induced Urolithiasis In Neonatal Rats Via Inhibition Of KIM-1/NGAL, Nrf2, And Inos Pathways



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Article

Curcumin ameliorates vitamin A deficiency-induced urolithiasis in neonatal rats via inhibition of KIM-1/NGAL, Nrf2, and iNOs pathways

January 2018 · LATIN AMERICAN JOURNAL OF PHARMACY 37(12):2502-2511

Authors:

A.A. Mukherjee · J. Zhang · Amit Kandhare, INDUS BIOTECH · Subhash Laxmanrao Bodhankar, Bharati Vidyapeeth's College of Pharmacy

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Abstract

The aim of present study was to investigate the effect of curcumin on vitamin A deficiency (VAD)-induced urolithiasis in neonatal rats. The weanling male Wistar rats was administered with vitamin A-deficient diet for 12 weeks and they were concomitantly treated with curcumin (20, 40, and 80 mg/kg). VAD resulted in significant alteration in urinary BUN, LDH, uric acid, creatinine, sodium, calcium, albumin, citrate, oxalate and glycosaminoglycans levels in urolithiasis control rats whereas curcumin treatment (40 and 80 mg/kg) significantly ($p < 0.001$) attenuated these alterations. Curcumin significantly ($p < 0.001$) inhibited VAD-induced elevated levels of oxido-nitrosative stress, up-regulated KIM-1, NGAL, iNOs and down-regulated Nrf2 mRNA expression. Transmission electron microscopical analysis revealed that curcumin attenuates ultrastructural alteration in the kidney induced by VAD. In conclusion, curcumin exerts it nephroprotective effect against VAD-induced urolithiasis in neonatal rats via modulation of renal function test, oxido-nitrosative stress and mRNA expressions of KIM-1, NGAL, Nrf2, and iNOs. © 2018, Colegio de Farmaceuticos de la Provincia de Buenos Aires. All rights reserved.

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Neuroprotective Effect of Naringin, A Flavone Glycoside In Quinolinic Acidinduced Neurotoxicity: Possible Role Of PPAR-Γ, Bax/Bcl-2, And Caspase-3

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Food and Chemical Toxicology
Volume 121, November 2018, Pages 95-108

Neuroprotective effect of naringin, a flavone glycoside in quinolinic acid-induced neurotoxicity: Possible role of PPAR-γ, Bax/Bcl-2, and caspase-3

Jian Cui [a], Gang Wang [a], Amit D. Kandhare [b], Anwesha A. Mukherjee-Kandhare [b], Subhash L. Bodhankar [b]

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Highlights

- Neurotoxicity was induced in Wistar rats by intrastriatal injection of quinolinic acid.
- Naringin decreased oxido-nitrosative stress, TNF-α, IL's and NF-kB mRNA levels.
- Naringin attenuated apoptosis (Bax-Bcl-2 and Caspase-3 mRNA) level.
- It increased mitochondrial complex (I-IV) activity and PPARγ mRNA expression.
- Naringin exerts its neuroprotective effect against QA-induced neurotoxicity.

Abstract

Background

Huntington's disease (HD) is a complex multifactorial neurodegenerative disorder. Naringin, a flavanone glycoside exhibits potent anti-inflammatory and antiapoptotic effect.

Aim

To evaluate the effect of naringin in quinolinic acid (QA)-induced neurotoxicity in laboratory rats.

Methods

Neurotoxicity was induced in male Wistar rats by single intrastriatal injection of QA (300 nmol/4 μl saline) in striatum except non-treated. Rats were administered orally with either vehicle (distilled water (10 mL/kg) or naringin (20, 40 and 80 mg/kg) or pioglitazone (40 mg/kg, p.o.) or its combination for 28 days.

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Low Molecular Weight Galactomannans-Based Standardized Fenugreek Seed Extract Ameliorates High-Fat Diet-Induced Obesity In Mice Via Modulation Of Fasn, IL-6, Leptin, And TRIP-Br_2

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Low molecular weight galactomannans-based standardized fenugreek seed extract ameliorates high-fat diet-induced obesity in mice *via* modulation of FASn, IL-6, leptin, and TRIP-Br2†

Amit D. Kandhare, *[a] Debasish Bandyopadhyay[b] and Prasad A. Thakurdesai[a]

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rsc.li/rsc-advances

Background: Obesity is a complex, chronic metabolic disorder and its prevalence is increasing throughout most of the world. Low molecular weight galactomannans-based standardized fenugreek seed extract (LMWGAL-TF) has previously shown anti-diabetic and anti-hyperlipidemic potential. *Aim*: To evaluate the efficacy and mechanism of action of LMWGAL-TF in treating high fat diet (HFD)-induced obesity and hyperlipidemia in mice. *Materials and methods*: Male C57BL/6 mice were fed the HFD for 12 weeks and were co-administered with LMWGAL-TF (10, 30 and 100 mg kg^{-1}, p.o.). Variables measured were behavioral, biochemical, molecular and histopathological. In a separate *in vitro* experiment, copper-ascorbate (Cu-As)-induced mitochondrial oxidative damage was evaluated. *Results*: The HFD-induced increase ($p < 0.001$) in body weight, fat mass, lean mass, adipose tissue (brown, mesenteric, epididymal and retroperitoneal) and liver weight was significantly attenuated ($p < 0.001$) by LMWGAL-TF (30 and 100 mg kg^{-1}). The HFD-induced elevated levels of serum lipid, interleukins (ILs)-6 and leptin were significantly decreased ($p < 0.001$) by LMWGAL-TF (30 and 100 mg kg^{-1}). Elevated fatty acid synthase (FASn), IL-6, leptin and transcriptional regulator interacting with the PHD-bromodomain 2 (TRIP-Br2) mRNA expression in brown adipose tissue (BAT), liver, and epididymal fat were significantly down-regulated ($p < 0.001$) by LMWGAL-TF (30 and 100 mg kg^{-1}). Additionally, HFD-induced histological alterations in skeletal muscle, liver, white adipose tissue (WAT) and BAT were also reduced by LMWGAL-TF. Furthermore, the Cu-As-induced alteration in mitochondria oxidative stress (lipid peroxidation, protein carbonylation, glutathione, glutathione reductase, glutathione peroxidase, isocitrate dehydrogenase and α-ketoglutarate dehydrogenase) in skeletal muscle and BAT was significantly ($p < 0.001$) ameliorated by LMWGAL-TF (2, 4 and 6 mg mL^{-1}) treatment. It also reduced the Cu-As-induced mitochondrial swelling. *Conclusion*: LMWGAL-TF showed its beneficial effect in reducing HFD-induced obesity *via* down-regulation of FASn, IL-6, leptin, and TRIP-Br2 in mice.

1 Introduction

Type 2 diabetes mellitus (T2DM) is a complex, chronic metabolic disorder across the world. An array of conditions such as imbalanced eating habits, high-fat diet (HFD), excessive caloric intake, reduced physical activity, sedentary lifestyles and neuroendocrine factors integrated with T2DM leads to increased obesity, which is now becoming one of the most severe threats.[1] Obesity in the population has increased significantly over the past decades and has now become a major factor responsible for morbidity and mortality worldwide.[2] In 2016, there were more than 1.9 billion adults that were overweight, and of these, over 650 million were obese, whereas 41 million children were overweight or obese.[3] It has been reported that obesity is also associated with other diseases such as cardiovascular disease, dyslipidemia, cerebrovascular disease, hypertension, non-alcoholic fatty liver disease and arthritis, which diminish the quality of life.[4]

Several mechanisms have been proposed to explain T2DM-induced obesity. Researchers have established the correlation between oxido-inflammatory stress and the development of metabolic disorders associated with obesity.[5,6] White adipose tissue (WAT) plays a vital role in this oxido-inflammatory-induced obesity and dyslipidemia. Adipose tissue is well known for releasing and controlling adipokines (leptin and adiponectin) and cytokines (tumor necrosis factor-α (TNF-α) and interleukin-6 (IL-6)).[7] It has been well documented that increased oxidative stress in adipocytes causes an imbalance between the leptin and adiponectin, leading to profound metabolic alterations that

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Anti-Epileptic Effect Of Morin Against Experimental Pentylenetetrazol-Induced Seizures Via Modulating Brain Monoamines And Oxidative Stress

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Anti-epileptic effect of morin against experimental pentylenetetrazol-induced seizures via modulating brain monoamines and oxidative stress

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ABSTRACT

Objective: To evaluate the protective effect of morin against pentylenetetrazol (PTZ)-induced tonic-clonic convulsions in mice. **Methods:** Swiss albino mice (18-22 g) was used to induce convulsions by intraperitoneal (i.p.) administration of PTZ (90 mg/kg). Mice were either pretreated with morin (10, 20 and 40 mg/kg) or vehicle (distilled water, 10 mg/kg) 45 min before PTZ administration. Various behavioral and biochemical parameters were assessed. **Results:** PTZ administration resulted in significant production (P<0.001) of tonic-clonic conclusion and mortality in mice. PTZ-induced increase in the duration of convulsion, onset of convulsion and mortality was inhibited significantly by morin (20 and 40 mg/kg) administration. The PTZ-induced decrease in brain GABA, dopamine and Na^+K^+ATPase levels and increase in xanthine oxidase activity were inhibited significantly by morin (20 and 40 mg/kg) treatment. The increased levels of malondialdehyde and nitric oxide level were significantly decreased by morin (20 and 40 mg/kg) treatment. Also, reduced levels of superoxide dismutase and glutathione were increased significantly by morin treatment. **Conclusions:** Results of the present study indicate that morin showed its anti-convulsant effect via modulating the levels of brain GABA, Na^+K^+ATPase, and oxido-nitrosative stress. Thus, morin can be a potential candidate for further clinical evaluations as an anti-epileptic agent.

1. Introduction

Epilepsy is a chronic disease of neurobiological system, affecting approximately 50/100 000 individual while 100/100 000 individual in developed and developing countries, respectively[1]. It has been reported that epilepsy prevalence in India is about 1/18th of the world population which is about 5.5-7.9/1 000 individual[2]. The children below 7 years-of-age and person of above 55 years have the higher epilepsy incidence[2].

Research carried out over past decades indicated that there are various mechanisms responsible for triggering neuronal injury[3-5]. This mechanism includes an imbalance between the neurotransmitter system such as glutamate-GABA (gamma-Aminobutyric acid) or impairment in voltage- and receptor-gated ion channels which plays a decisive role in the neuronal cell death. This resulted in various disorders of neurobiological system such as epilepsy, Alzheimer's disease, parkinsonism and ischemia[6,7]. The increase in the consequence of epileptic seizures led to the development of many antiepileptic drugs for ameliorating the neuronal damage[8].

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Add-On Therapy Of Herbal Formulation Rich In Standardized Fenugreek Seed Extract In Type 2 Diabetes Mellitus Patients With Insulin Therapy: An Efficacy And Safety Study

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Add-on therapy of herbal formulation rich in standardized fenugreek seed extract in type 2 diabetes mellitus patients with insulin therapy: An efficacy and safety study

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ABSTRACT

Objective: To assess the safety and efficacy of herbal formulation rich in standardized fenugreek seed extract (IND-2) add-on therapy in type 2 diabetes mellitus (T2DM) patients who were on insulin treatment in prospective, single arm, open-label, uncontrolled, multicentre trial. **Methods:** T2DM patients (n=30) with aged 18-80 years who were stabilized on insulin treatment with fasting blood sugar (FBS) level between 100-140 mg/dL received IND-2 capsules (700 mg, thrice a day) for 16 weeks. The primary endpoints were an assessment of FBS at week 2, 4, 6, 8, 12 and 16. Secondary end-points include post-prandial blood sugar level, glycosylated Hb (HbA1c), reduction in the dose of insulin and number of hypoglycemic attacks, and improvement in lipid profile at various weeks. Safety and adverse events (AEs) were also assessed during the study. **Results:** Study was completed in twenty T2DM patients, and there was no significant reduction in FBS and post-prandial blood sugar level after add-on therapy of IND-2. However, add-on therapy of IND-2 significantly reduced (P<0.01) the HbA1c values, requirements of insulin and hypoglycemic events as compared with baseline. Total cholesterol, high-density lipoproteins-cholesterol, and low-density lipoprotein-cholesterol levels were significantly increased (P<0.01) after IND-2 add-on therapy. Body weight and safety outcomes did not differ significantly in IND-2 add-on therapy group at week 16. Additionally, add-on therapy of IND-2 did not produce any serious adverse events. **Conclusions:** The results of present investigation suggest that add-on therapy of IND-2 with insulin in T2DM patients improves glycaemic control through a decrease in levels of HbA1c and number of insulin doses needed per day without an increase in body weight and risk of hypoglycemia. Thus, IND-2 may provide a safe and well-tolerated add-on therapy option for the management of T2DM.

1. Introduction

Type 2 diabetes mellitus (T2DM) is a complex, chronic progressive disease which is most common amongst the various forms of diabetes. It is manifested by hyperglycemia, disturbance in the metabolism of carbohydrate, fat, and protein which could be the result from deficiency secretion of insulin or its actions[1]. It is a long-term metabolic disorder which is associated with multiple comorbidities as well as microvascular and macrovascular

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Efficacy And Safety Of Herbal Formulation Rich In Standardized Fenugreek Seed Extract As Add-On Supplementation In Patients With Type 2 Diabetes Mellitus On Sulfonylurea Therapy: A 12-Week, Randomized, Double-Blind, Placebo-Controlled, Multi-Center Study

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ORIGINAL ARTICLE

Efficacy and Safety of Herbal Formulation Rich in Standardized Fenugreek Seed Extract as Add-on Supplementation in Patients with Type 2 Diabetes Mellitus on Sulfonylurea Therapy: A 12-week, Randomized, Double-blind, Placebo-controlled, Multi-center Study

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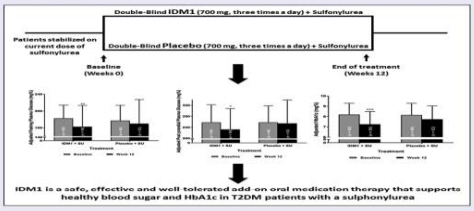
ABSTRACT

Background: Type 2 diabetes mellitus (T2DM) is a chronic, complex, and progressive illness that often needs combination therapy for better glycemic control. IDM1, an herbal formulation which is rich in standardized fenugreek seed extract. **Aim:** The aim of this study is to evaluate the efficacy and safety of add-on therapy of IDM1 in T2DM patients inadequately controlled on sulfonylurea monotherapy. **Materials and Methods:** In this 12-week, randomized, double-blind, placebo-controlled, multi-centric study, T2DM patients which inadequate glycemic control with background stable dose medication of sulfonylurea was screened (n = 120). The patients were randomized 1:1 to add-on therapy of IDM1 and placebo, 700 mg three times daily for 12 weeks. **Results:** A total of 119 patients were randomized and included in the efficacy analysis (IDM1, n = 60; placebo, n = 59). At week 12, adjusted fasting plasma glucose (FPG) (20 mg%), postprandial plasma glucose (PPPG) (26 mg%), and glycated hemoglobin (HbA1c) (0.9 mg%) was reduced significantly ($P < 0.05$) from baseline as compared to placebo group (FPG: 7 mg%; PPPG: 4 mg% and HbA1c: 0.4 mg%). These beneficial effects were seen as early as 1 month after consumption of IDM1 and continued until at least 15 days after withdrawal of IDM1. Hypoglycemic events were mostly mild, and none required emergency treatment. There were no major changes in body weight, hematology, and biochemistry at week 12 as compared to baseline. Overall AEs rates were similar in both groups. **Conclusions:** IDM1 is a safe, effective, and well-tolerated add-on oral medication therapy that supports healthy blood sugar levels and glycosylated hemoglobin levels in T2DM patients inadequately controlled with a sulfonylurea.

Key words: Add-on therapy, glycemic control, glycated hemoglobin, standardized fenugreek seed extract, sulfonylureas, type 2 diabetes

SUMMARY

- IDM1, an herbal formulation which is rich in standardized fenugreek seed extract
- In this 12-week, randomized, double-blind, placebo-controlled, multi-centric study, T2DM patients which inadequate glycemic control with a stable dose of sulfonylurea was received add-on therapy of IDM1 (700 mg, three times daily) for 12 weeks
- At week 12, add-on therapy of IDM1 showed significant ($P < 0.05$) reduction in adjusted FPG (20 mg%), PPPG (26 mg%), and HbA1c (0.9 mg%) from baseline as compared to placebo group
- Thus, IDM1 is a safe, effective, and well-tolerated add-on oral medication therapy that supports healthy blood sugar levels and glycosylated hemoglobin levels in T2DM patients inadequately controlled with a sulfonylurea.



Abbreviation used: AEs: Adverse events; ALP: Alkaline phosphatase; ALT: Alanine transaminase; AST: Aspartate transaminase; BMI: Body mass index; BUN: Blood urea nitrogen; FPG: Fasting plasma glucose; GGT: Gamma glutarnyl transferase; HbA1c: Glycated hemoglobin; HDL: High-densitylipoproteins; LDH: Lactatedehydrogenase; LDL: Low-density lipoproteins.

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Evaluation Of Health-Related Quality Of Life In Hemolytic Uraemic Syndrome Patients Treated With Eculizumab: A Systematic Evaluation On Basis Of EMPRO

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Evaluation of health-related quality of life in hemolytic uraemic syndrome patients treated with eculizumab: a systematic evaluation on basis of EMPRO

Anwesha A. Mukherjee, Amit D. Kandhare, and Subhash L. Bodhankar

Abstract

Background: Hemolytic uraemic syndrome (HUS) is progressive renal failure disease and determination of their quality of life (QoL) on the basis of patient-reported outcomes (PROs) are becoming increasingly important in the economic evaluations for its treatment with eculizumab (ECU).

Aim: To perform the systematic evaluation of QoL in HUS patients treated with ECU on the basis of Evaluating Measures of Patient Reported Outcomes (EMPRO) tool.

Materials and methods: A systematic review was conducted in PubMed, EMBASE, the Cochrane Library, CINAHL and Google Scholar till September 2016 by two independent researchers. Each identified instrument was evaluated for its quality of performance by using the EMPRO tool for its overall score and seven attribute specific scores (range 0–100, worst to best).

Results: Five different PROs instruments were identified from 10 articles ($n = 112$) which showed eculizumab significantly improves health-related quality of life (HRQOL) in atypical HUS (aHUS) patients. Amongst five instruments viz. EuroQol five dimensions questionnaire (EQ-5 D) Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F), Headache Impact Test-6 (HIT-6), 36-Item Short Form Health Survey (SF-36) and Visual Analogue Scale (VAS), the overal EMPRO score was higher for VAS (73.83) and EQ-5 D (73.81). Whereas, FACIT-F and HIT- 6 were just able to meet the minimal threshold of EMPRO scoring (50.24 and 59.09, respectively).

Conclusions: Evidence from present investigation support that eculizumab significantly proves HRQoL in patients with aHUS furthermore, EQ-5 D and VAS instrument should be ommended for assessing HRQoL in them. However, selection of PRO instrument for dete

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Hesperidin, A Plant Flavonoid Accelerated The Cutaneous Wound Healing In Streptozotocin-Induced Diabetic Rats: Role Of Tgf-B/Smads And Ang-1/Tie2

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Effect of hesperidin and insulin treatment on body weight (in gm) of diabetic rats

Rat No.	Normal	NWC	DWC	I (10)	H (25)	H (50)	H (100)
1	188.2	205.0	159.5	196.9	166.0	192.0	188.9
2	214.8	178.0	162.0	206.2	171.0	171.0	206.1
3	202.0	180.0	168.0	202.4	171.0	196.0	200.0
4	199.0	185.0	162.0	200.0	179.5	201.0	200.0
5	187.6	184.0	164.0	210.1	177.0	196.0	189.1
6	183.4	181.0	175.5	185.4	175.5	200.0	189.9

NWC: Normal wound control group; DWC: Diabetic wound control group; I (10): Insulin (10 IU/kg, s.c.) treated group; H (25): Hesperidin (25 mg/kg, p.o.) treated group; H (50): Hesperidin (50 mg/kg, p.o.) treated group; H (100): Hesperidin (100 mg/kg, p.o.) treated group

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Anti-Allergic Potential Of Fisetin In A Murine Model Of Ova-Induced Allergic Rhinitis Via Inhibition Of Gata-3 And Th2 Cytokines Zhao L

D:\Biomedica Vol. 34, Issue 2, Apr. – Jun., 2018\Bio-8.Doc Fig. 2-4 Color P. 88 – 101 (KC) IV

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ANTI-ALLERGIC POTENTIAL OF FISETIN IN A MURINE MODEL OF OVA-INDUCED ALLERGIC RHINITIS VIA INHIBITION OF GATA-3 AND TH2 CYTOKINES

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ABSTRACT

Background and Objectives: Allergic rhinitis (AR) is an IgE mediated immune-inflammatory disease, characterized by sneezing, rhinorrhea, lacrimation, etc. Fisetin is a plant flavonoid, reported to have anti-allergic potential via inhibition of Th2 response. Objective of this study was to evaluate the anti-allergic potential of fisetin against ovalbumin (OVA)-induced experimental allergic rhinitis in BALB/c mice.

Methodology: Mice were sensitization by OVA (500 µl, i.p.) on days 1, 3, 5, 7, 9, 11, 13 and treated with fisetin (10, 20 and 40 mg/kg, p.o.) for 21 days, followed by OVA (5 µl per nostril) challenged on the 21st day.

Results: Administration of fisetin (20 and 40 mg/kg) significantly attenuated ($p < 0.05$) OVA-induced nasal rubbing, sneezing and discharge, histamine-induced rubbing and sneezing, and hematological parameters as compared to AR control mice. OVA-induced elevated levels of serum histamine, β-hexosaminidase, IgE and IgG1 as well as Th2 cytokines (IL-4, IL-5, IL-13, and IL-17) in nasal lavage fluid was significantly ($p < 0.05$) attenuated by fisetin. It also significantly inhibit ($p < 0.05$) up-regulated mRNA expressions of GATA3, IL-4, IL-5 and IL-13 in spleen tissue. Fisetin administration significantly reduced ($p < 0.05$) histological aberrations induced by OVA in nasal mucosa, spleen, and lungs.

Conclusion: The findings of the present study showed that fisetin exerts its anti-allergic potential via modulation of GATA3 pathway to inhibit the release of Th2 cytokines (IL-4, IL-5, IL-13) and IgE, thus reducing OVA-induced nasal rubbing and sneezing during allergic rhinitis.

Keywords: Allergic rhinitis, Fisetin, GATA3, lgE, Interleukins, Ovalbumin, TNF-α.

INTRODUCTION

Allergic rhinitis (AR) is a chronic immune-inflammatory disorder which is increasing, significantly, worldwide resulting in important social and medical problems.[1] Rhinitis is associated with widespread morbidity, significant treatment costs, impaired work productivity and quality of life. The characteristic features of AR include nasal congestion, sneezing, rhinorrhea, and pruritus of nosea long with eyes. Additionally, it is also associated with various complications including headache, fatigue, sinusitis, sleep disturbance, eustachian tube dysfunction, and cognitive impairment.[2] According to a report by European Community Respiratory Health Survey (ECRHS), the prevalence of AR is 5-22%. While, more than 35% of the European and Australian population suffer from AR, about 26% of Indians are affected with it.[3]

Researchers have well documented that exposure to an array of mediators such as indoor allergens (such as dust mites and stuffed furniture), outdoor allergens (like molds and pollen of grains, grass, trees, weeds, etc.), chemical irritants, tobacco smoke, air pollution, and food cause hypersensitive response which results in Allergic rhinitis.[4]Cumulative data obtained from animal studies have suggested that imbalance in T-helper type 1 (Th1) and T-helper type 2 (Th2) responses cause inflammation and remodelling in nasal mucosa that result in the progress of AR.[5,6] Th2 responses are up-regulated due to elevated production of cytokines including tumour necrosis factor-alpha (TNF-α), interleukins (IL's) (IL-1β, IL-4, IL-5 and IL-6), release of nitric oxide from macrophages, production of reactive oxygen species (ROS), immunoglobulin (IgE), and mast cell.[5,6] These vicious molecules are responsible for synthesis of IgE and its cross-linking with high-affinity IgE receptors (FcεRI) present on mast cell sur-

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Elucidation of The Molecular Mechanism of Tempol In Pentylenetetrazol-Induced Epilepsy In Mice: Role of Gamma - Aminobutyric Acid, Tumor Necrosis Factor-Alpha, Interleukin-1β And C-Fos

Elucidation of the molecular mechanism of tempol in pentylenetetrazol-induced epilepsy in mice: Role of gamma-aminobutyric acid, tumor necrosis factor-alpha, interleukin-1β and c-Fos

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Fisetin, A Plant Flavonoid Ameliorates Doxorubicin-Induced Cardiotoxicity In Experimental Rats: The Decisive Role OfCaspase-3, COX-II, Ctn-I, Inos And TNF

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Mol Biol Rep. 2019 Feb;46(1):105-118. doi: 10.1007/s11033-018-4450-y. Epub 2018 Oct 25.

Fisetin, a plant flavonoid ameliorates doxorubicin-induced cardiotoxicity in experimental rats: the decisive role of caspase-3, COX-II, cTn-I, iNOs and TNF-α

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Abstract

Doxorubicin (DOX) is a widely used anthracycline antibiotic for the management of carcinoma. However, it is associated with cardiotoxicity. Fisetin is a plant flavonoid reported to have anti-inflammatory and antiapoptotic potential. To evaluate the cardioprotective potential of fisetin in DOX-induced cardiotoxicity in experimental rats. Sprague-Dawley rats were pre-treated with either fisetin (10, 20 and 40 mg/kg) or sitagliptin (10 mg/kg, p.o.) for 7 days. Cardiac toxicity was induced in rats (except the normal group) by doxorubicin (15 mg/kg i.p.) on 8th day. Various behavioral, biochemical, molecular and histological parameters were assessed in cardiac tissue. DOX-induced alterations in electrocardiographic, hemodynamic and left ventricular function were significantly ($p < 0.05$) inhibited by fisetin (20 and 40 mg/kg) treatment. Fisetin significantly decrease ($p < 0.05$) DOX-induced elevated serum CK-MB, LDH, AST, ALT and ALP levels. DOX-induced elevated cardiac oxido-nitrosative (SOD, GSH, MDA and NO) was significantly inhibited ($p < 0.05$) by fisetin. Up-regulated cardiac caspase-3, COX-II, cTn-I, iNOs, TNF-α, and IL-1β mRNA, as well as protein expressions were significantly decreased ($p < 0.05$) by fisetin treatment. It also significantly ($p < 0.05$) attenuated DOX-induced histopathological alterations in cardiac tissue. In conclusion, the fisetin exerts its cardioprotective potential against DOX-induced toxicity via inhibition of multiple pathways including oxidative stress (SOD, GSH, MDA and NO), inflammation (COX-II, TNF-α, and IL-1β), and apoptosis (Caspase-3). Therefore, fisetin can be considered as a potential cardioprotective agent during the management of carcinoma using doxorubicin anthracyclines.

Keywords: COX-II; Cardiotoxic; Caspase-3; Doxorubicin; Fisetin; cTn-I.

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Pioglitazone And Risk Of Bladder Cancer In Type 2 Diabetes Mellitus Patients: A Systematic Literature Review And Meta-Analysis Of Observational Studies Using Real-World Data

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Original article

Pioglitazone and risk of bladder cancer in type 2 diabetes mellitus patients: A systematic literature review and meta-analysis of observational studies using real-world data

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ABSTRACT

Objectives: Patients with type 2 diabetes mellitus (T2DM) have a higher incidence of bladder cancer (BC); however, the evidence underlining the association between pioglitazone use and BC risk remains inconclusive. We conducted a systematic review and meta-analysis of observational studies to investigate the effect of pioglitazone on risk of BC in T2DM patients.
Methods: We searched all publications regarding risk of BC with pioglitazone use through PubMed, Web of Science and Cochrane library databases from inception to March, 2017. Pooled hazard ratio (HR) and 95% confidence interval (CI) were calculated using a random-effect, generic inverse variance method.
Results: Total 15 observational (9 cohort and 6 case-control) studies were meta-analyzed. The pooled results showed a significant association between risk of BC and pioglitazone use (HR 1.20, 95%CI 1.09–1.31; $P < 0.0001$; $I^2 = 4\%$). In subgroup analysis, cumulative dose of pioglitazone (– and >mg) showed a significant association with risk of BC (HR 1.27; 95%CI 1.05–1.54; $P = 0.01$; $I^2 = 0\%$ and HR 1.68, 95%CI 1.36–2.08; $P < 0$ $I^2 = 0\%$ respectively). In addition, a significant association was seen with risk of BC and pioglitazone treatment duration (12–24 months and >24 months) (HR 1.43; 95%CI 1.19–1.71; $P = 0.0001$; $I^2 = 0\%$ and HR 1.58; 95%CI 1.27–1.97; $P < 0.0001$; $I^2 = 29\%$ respectively). Meta-analysis of pioglitazone *vs.* rosiglitazone use, showed a significant association (HR 1.34; 95%CI 1.05–1.71; $P = 0.02$; $I^2 = 0\%$) with BC risk and pioglitazone use.
Conclusion: Pioglitazone use is associated with risk of BC in T2DM patients. Risk of bladder cancer appears to be associated with higher dose and longer duration of pioglitazone use.
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1. Introduction

Thiazolidinediones (TZDs), pioglitazone and rosiglitazone are oral hypoglycaemic drugs used for the management of type 2 diabetes mellitus (T2DM). TZDs are insulin sensitizers, widely used for the management of T2DM. Pioglitazone belongs to the TZD group, target PPAR-γ protein, a key transcription factor for adipogenesis and glucose homeostasis.[1] On the other hand, patients with diabetes mellitus have a higher incidence of bladder cancer,[2] but the association between TZD use and bladder cancer still a matter of debate.[3,4] According to American Cancer Society, new cases of bladder cancer and deaths from bladder cancer are expected in 2016 in the United States (US).[5] Incidence of bladder cancer first time observed in a PROactive study, where 14 cases of bladder cancer were found in the pioglitazone treatment arm compared with 5 cases in the placebo group.[6] Preclinical studies reported that pioglitazone and rosiglitazone treatment could develop bladder cancer in diabetic rats.[7,8] It has been also found that pioglitazone exposure caused bladder cancer in male rats, while not observed in mice of either sex. However, mechanism behind the pioglitazone-induced urinary bladder cancer might not be due to PPAR-γ interactions because of differential variation in PPAR-γ expression subsist between the species and sex.[9] Results from a 2 year nonclinical carcinogenicity studies suggested that monotherapy of rosiglitazone were not associated with the bladder cancer.[10] Conversely, another study reveals that rosiglitazone remarkably prop up the bladder neoplasm occurrence in rats pre-treated with hydroxybutyl (butyl) nitrosamine.[7] An independent re-analysis of the RECORD trial data confirmed the original

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Development And Validation Of UV-Visible Spectroscopy Method For Simultaneous Estimation Of Saxagliptin Hydrochloride And Metformin Hydrochloride In Tablet Dosage Form

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Development and validation of UV-Visible spectroscopy method for simultaneous estimation of Saxagliptin hydrochloride and metformin hydrochloride in tablet dosage form

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Abstract
A simple, rapid and validated analytical method has been developed for estimation of Saxagliptin and Metformin in tablet dosage form. The optimum conditions for the analysis of the drug were established. The maximum wavelength (λ_{max}) of Saxagliptin were found to be 274nm and Metformin 231nm. The percentage recovery of Saxagliptin(API) 100.10% and Metformin(API) 99.98%. Beer's laws were obeyed in the concentration range 50-90 µg/ml for Saxagliptin and 2-10µg/ml for Metformin. The linear equation of Saxagliptin and Metformin was calculated. The method was validated in terms of linearity, accuracy, precision, specificity, limit of detection and limit of quantitation. Validation was performed as per ICH guidelines. The proposed method was successfully applied for the quantitative determination of Metformin and Saxagliptin in tablet dosage form (percentage label claim 99.60% and 100% respectively).

Keywords: Saxagliptin, metformin, simultaneous estimation

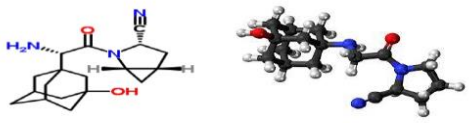
Introduction

Gliptin

Dipeptidyl peptidase-4 inhibitor (DPP-4) they are prescribed to type-2 Diabetes patients. DPP-4 inhibitor may help with weight loss as well as decrease blood glucose level.
Derivatives of Gliptins are
a. Alogliptin
b. Linagliptin
c. Saxagliptin
d. Sitagliptin.

Saxagliptin

This is new oral hypoglycemic of the new DPP-4 inhibitor class of drugs. Saxagliptin is chemically identify as (1S, 3S, 5S)-2-[(2S)-2-Amino-2-(3 Hydroxytricyclo[3.3.1.13,7]dec-1-yl)acetyl]-2 azabicyclo[3.1.0]hexane-3-carbonitrile previously identified as BMS-477118.
Empirical formula is $C_{18}H_{25}N_3O_2$, H_2O and molecular weight 333.43. It is sparingly soluble in water and soluble in methanol.
Structural formula of Saxagliptin is as follows



Saxagliptin is used for treatment of type-2 Diabetes Mellitus and also used to improve glycaemic control in type-2 Diabetes Mellitus patients. Saxagliptin is used with Metformin, Sulphonylurea or Pioglytazone, when blood sugar level is not controlled by one of these agents alone. Literature survey reveals that the drug can be estimated only by LC-MS/MS, Spectrophotometric method.

Metformin Hydrochloride

It is water soluble compound and the anti-diabetic drug from the biguanide class of oral hypoglycemic agent. It chemically identify as 1, 1-dimehtylbiguanidine monohydrochloride and empirical formula is $C_4H_{12}N_5Cl$, molecular weight is 165.625 gm/mol. Metformin hydrochloride increase glucose transport across the cell membrane in skeletal muscle. Spectroflourimetry, RP-HPLC, HPTLC, LC-MS/MS and UV-Visible Spectroscopy methods was reported for determination of Metformin.
Structural formula of Metformin:

Literature survey reveals that various methods were reported for single estimation of Saxagliptin and Metformin, but no spectroscopic method has been reported for the analysis of

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Formulation And Evaluation Of Mouth Dissolving Tablet Of Bendroflumethiazide

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RESEARCH ARTICLE

FORMULATION AND EVALUATION OF MOUTH DISSOLVING TABLET OF BENDROFLUMETHIAZIDE

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ABSTRACT

In the present research work, mouth dissolving tablets of bendroflumethiazide were prepared by direct compression method with a view to enhance patient compliance. Mouth dissolving tablets have many numbers of advantages over the conventional tablets like rapid disintegration, faster dissolution, Ease of administration and quick onset of action etc. Two super-disintegrants, viz., croscarmellose sodium and sodium starch glycolate in different ratios with microcrystalline cellulose along with mannitol to enhance mouth feel. Many pharmaceutical dosages are administered in the form of pills, granules, powders, and liquids. Generally, a pill is designed for swallowing intact or chewing to deliver a precise dosage of medication to patients. The drug and excipient interaction study was carried out by taking Infrared Spectrum of Pure drug and optimized formulation (B2). There was no change in the prominent functional groups of indicating drug is in intact form. The prepared batches of tablets were evaluated for hardness, friability, drug content, wetting time, water absorption ratio, disintegration time and dissolution study.

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INTRODUCTION

The most commonly used dosage form for pharmaceutical preparations is currently the tablet, available in various forms and administered orally. The advantages of this dosage form are manifold: tablets are cost effective to manufacture, convenient to dispense and store, easy for the patient to administer and they provide a versatile means of delivering the drug. Release of drug from the tablet can be controlled by altering the design and content of the formulation. Also, since this is a dry dosage form, tablets provide a supportive environment for drug stability and generally have a relatively long shelf life (Bharat Parashar *et al.*, 2012). The properties of the tablet (e.g. mechanical strength, disintegration time and drug release characteristics) are affected by both the properties of the constituent materials and the manufacturing process. Excipients such as diluents, binders and lubricants are generally needed in a formulation in order to facilitate the manufacturing process, but also to ensure that the resulting tablets have the desired properties. For instance, tablets should be sufficiently strong to withstand handling during manufacturing and usage, but should also disintegrate and release the drug in a predictable and reproducible manner (Rudnic, ?). Drug Delivery Systems (DDS) are a strategic tool for expanding markets/indications, extending product life cycles and generating opportunities. DDS make a significant contribution to global pharmaceutical sales through market segmentation and are moving rapidly. Drug delivery systems are becoming increasingly sophisticated as scientists acquire a better understanding of the physicochemical parameters pertinent to their performance (Chein, 1992). Despite of tremendous advancements in drug delivery, the oral route remains the perfect route for the administration of therapeutic agents because of low cost of therapy, ease of administration, self-medication, leading to high levels of patient compliance. Tablets and capsules are the most popular dosage forms [(4)]. It is a tablet that disintegrates and dissolves rapidly in the saliva, within a few seconds without the need of drinking water or chewing. A mouth dissolving tablet usually dissolves in the oral cavity within 15 second to 3min.

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Formulation And Evaluation Of Carbamazepine Nanoemulsion For Brain Targeted Drug Delivery Via Intranasal Route

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"FORMULATION AND EVALUATION OF CARBAMAZEPINE NANOEMULSION FOR BRAIN TARGETED DRUG DELIVERY VIA INTRANASAL ROUTE"

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ABSTRACT
Intranasal drug administration is receiving increased attention as adelivery method for by-passing the blood–brain barrier and rapidly targeting therapeutics to the brain or CNS. The objective of the present study was to selected carbamazepine nanoemulsion for nose-to-brain delivery. Carbamazepine nanoemulsion (NE) formulation were successfully prepared by the spontaneous emulsification method (titration method) using Capmul MCM as the oil, Tween-80 as surfactant, and PEG-600 as co-surfactant phase on the basis of solubility studies. The nanoemulsion formulation containing 7.35% oil, 66.18% Smix ratio (3:1 Tween-80:PEG-600 ratio),26.47% (v/v) aqueous phase that displayed an optical transparency of 99.42±0.81%, globule size of 71.70±3.06 nm, and polydispersity index of 0.256±0.002. The selected Carbamazepine nanoemulsion was characterized, and the *in-vitro* drug release and *in-vivo* nasal absorption of drug from the selected formulation were evaluated in rats. *In-vitro* and ex vivo permeation studies showed an initial burst of drug release at 60 min and Carbamazepine nanoemulsion show drug release up to 5 h. In vivo pharmacokinetic studies in rats showed that Carbamazepine.

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15	Therapeutic Potential of Morin in Ovalbumin-induced Allergic Asthma Via Modulation of SUMF2/IL-13 and BLT2/NF-kB Signaling Pathway	Ms. A. A. Mukharjee	Pharmacology	Current Molecular Pharmacology	Current Molecular Pharmacology, 2019, Vol. 12,	View Document	https://www.researchgate.net/publication/330122445_Therapeutic_Potential_of_Morin_in_Ovalbumin-induced_Allergic_Asthma_Via_Modulation_of_SUMF2IL-13_and_BLT2NF-kB_Signaling_Pathway
16	Acute and sub-chronic oral toxicity studies of hesperidin isolated from orange peel extract in Sprague Dawley rats	Ms. A. A. Mukharjee	Pharmacology	Regulatory Toxicology and Pharmacology	www.elsevier.com/locate/yrtph	View Document	https://www.researchgate.net/publication/332404120_Acute_and_sub-chronic_oral_toxicity_studies_of_hesperidin_isolated_from_orange_peel_extract_in_Sprague_Dawley_rats

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Ferulic acid ameliorates doxorubicin-induced cardiac toxicity in rats

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ORIGINAL ARTICLE

Ferulic acid ameliorates doxorubicin-induced cardiac toxicity in rats

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Abstract
Ferulic acid (FA) is a phenolic compound with potent antioxidant activity. The objective of the study was to study the protective effects of FA on doxorubicin (Dox)-induced myocardial toxicity in rats. Wistar rats received vehicle (control) or Dox (20 mg/kg, i.p.) or telmisartan (Tel; 10 mg/kg, p.o.) or ferulic acid (20 mg/kg and 40 mg/kg, p.o.) for 7 days followed by treatment with Dox (20) on the fifth day of treatment, except the control group. On day 8, electrocardiographic parameters were recorded followed by blood withdrawal and then the animals were sacrificed for histopathology. Administration of Dox showed prolonged RR, QTc interval, and QRS complex. The levels of serum CK-MB, LDH, IL-1β, and IL-6 were significantly increased ($p < 0.01$). Similarly, levels of Ca^{+2}, Mg^{+2} ATPase, and Ca^{+2} ATPase and expression of ANP and BNP were significantly higher as compared to the control. In the FA-treated group, ECG was normal. The serum levels of CK-MB, LDH, IL-1β, and IL-6 were not elevated. Heart tissue Ca^{+2}, Mg^{+2} ATPase, and Ca^{+2} ATPase did not show a statistical difference compared to the control group. The FA treatment attenuated the expression of ANP and BNP. FA (20 and 40) augmented myocardial GSH and Na^{+}/K^{+} ATPase. Histopathology of the heart confirmed the cardioprotective effect of FA.

Keywords Anti-oxidant · Cardiac toxicity · Doxorubicin · Ferulic acid · Rats

Introduction

Doxorubicin (Dox) is an anthracycline derivative, clinically used for treatment of a variety of cancerous growth such as breast cancer, lung cancer, and acute leukemias (Hortobagyi 1997; Pugazhendhi et al. 2018). Cardiotoxicity is the severe adverse effect associated with its use. It is speculated to be mediated via mitochondrial dysfunction (Singal and Iliskovic 1998). Dox-induced cardiac toxicity is a multifactorial process that includes oxidative stress, thereby stimulating lipid peroxidation (Vallejo et al. 2017), iron metabolism, inflammation, ER stress, mitochondrial permeability transition, loss of mitochondrial integrity, and function which is essential for Ca homeostasis and signaling, as well as activation of the renin-angiotensin system (Yu et al. 2018). These pathological consequences restrict clinical use of Dox due to its dose-dependent cardiotoxicity leading to the electrocardiographic irregularity, arrhythmias, cardiomyopathy, and congestive heart failure (Pugazhendhi et al. 2018). It has also been reported that approximately 10% of cancer survivors treated with Dox or its derivatives may develop cardiac complications, even when chemotherapy is stopped (Octavia et al. 2012).

Preclinical studies have evaluated several molecules, such as β-receptor blockers, angiotensin receptor blockers, amifostine, dexrazoxane, mesna, leucovorin, and erythropoietin, as cardio-protective adjuvants (Ludke et al. 2009; Alimoradi et al. 2012). A variety of plant-derived bioactive also have been proved to attenuate Dox-induced cardiac toxicity such as p-coumaric acid (Abdel-Wahab et al. 2003), curcumin, green tea, garlic or L-carnitine (Radwan et al. 2012), thymoquinone (Nagi and Almakki 2009), alpha-lipoic acid (Al-Majed et al. 2002), and resveratrol (Oktem et al. 2012). However, no molecule is approved clinically due to severe adverse effects and complex pharmacokinetics of natural compounds in the human body. Ferulic acid [FA (3-(4-hydroxy-3-methoxy-phenyl) prop-2-enoic acid)] is a phenolic compound present in most of the plants (Maurya and Devasagayam 2010). It readily forms resonance stabilized phenoxy radical that might be responsible for its strong antioxidant activity. FA absorbs UV radiation and forms a stable

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Diarylheptanoid, a constituent isolated from methanol extract of Alpinia officinarum attenuates TNF-α level in Freund's complete adjuvant-induced arthritis in rats

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Diarylheptanoid, a constituent isolated from methanol extract of *Alpinia officinarum* attenuates TNF-α level in Freund's complete adjuvant-induced arthritis in rats

Varsha S. Honmore[a,1], Amit D. Kandhare[b], Parag P. Kadam[b,1], Vijay M. Khedkar[c], Arun D. Natu[a,*], Supada R. Rojatkar[d,*], Subhash L. Bodhankar[b,*]

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ARTICLE INFO

Keywords:
1-phenyl-5-hydroxy-7- (4″-hydroxy-3″-methoxyphenyl) heptane-3-one (i.e. 5-HPH)
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Complete Freund's adjuvant-induced arthritis
Interleukin (IL)-1β
Molecular docking
Oxidative stress
Tumor necrosis factor (TNF)-α

ABSTRACT

Ethnopharmacological relevance: Rheumatoid arthritis (RA) is a chronic inflammatory and destructive joint disease that affects the worldwide population. *Alpinia officinarum* Hance (Zingiberaceae), rhizomes are widely used ethnobotanically as an anti-inflammatory, analgesic, and antioxidant agent in traditional medicine.
Aim: To investigate the efficacy and possible mechanism of isolated phytoconstituent from the methanol extract of *A. officinarum* (MEAO) rhizomes against Freund's complete adjuvant (FCA)-induced arthritis in rats. Furthermore, molecular docking was performed to study the binding mode of this compound into the active site of TNF-α.
Materials and methods: Diarylheptanoid was isolated from MEAO, well characterized (HPTLC, ^{1}H NMR, ^{13}C NMR, and ESI-MS) and evaluated for its antiarthritic activity in female Wistar rats (170–200 g). Diarylheptanoid (5, 10 and 20 mg/kg, p.o.) was administered starting from day 12. Various behavioral, biochemical, molecular and histopathology parameters were evaluated. Molecular docking study was performed using Glide module integrated into Schrodinger molecular modeling software.
Results: The structure and molecular weight of the isolated compound (diarylheptanoid) were confirmed by 1D and mass spectral data and characterized as 1-phenyl-5-hydroxy-7- (4″-hydroxy-3″-methoxyphenyl) heptane-3-one (i.e., 5-HPH) with molecular formula $C_{20}H_{24}O_4$. Administration of 5-HPH (10 and 20 mg/kg) significantly inhibited ($p < 0.05$) FCA induced increases in paw volume, joint diameter, thermal hyperalgesia and tactile allodynia. It also significantly decreased oxido-inflammatory markers (SOD, GSH, MDA, and TNF-α). FCA induced a histological alteration in ankle joint also attenuated by 5-HPH. Its Glide docking score was found to be −9.702 with binding energy (Glide energy) of −37.033 kcal/mol.
Conclusion: 5-HPH may exhibit its anti-arthritic potential via inhibition of elevated oxido-inflammatory markers thus restoring the elevated hyperalgesia, allodynia and reducing destruction in synovial membrane and cartilage. Therefore, 5-HPH is a potential moiety bearing antioxidant and with anti-inflammatory properties to inhibit FCA-induced arthritis in rats. The results of the present investigation should enable the design of potent small-molecule inhibitors that inactivate TNF-α with high affinity and specificity.

Abbreviations: AIA, Adjuvant-Induced Arthritis; ALP, Alkaline Phosphatase; ALT, Alanine Aminotransferase; AST, Aspartate Aminotransferase; ESI-MS, Electrospray Ionization-Mass Spectrometry; ELISA, Enzyme-Linked Immunosorbent Assay; FCA, Freund's Complete Adjuvant; GSH, Reduced Glutathione; 5-HPH, 1-phenyl-5-hydroxy-7- (4″-hydroxy-3″-methoxyphenyl) heptane-3-one; Malonadehyde MDA, Lipid Peroxidation; MEAO, Methanol Extract of A. officinarum; ROS, Reactive Oxygen Species; SOD, Superoxide Dismutase; TNF-α, Tumor necrosis factor-alpha; IL's, Interleukin's

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Efficacy of Antioxidant Supplements on Prevention and Amelioration of Cisplatin-Induced Nephrotoxicity: A Systematic Review and Meta-analysis of Randomized Controlled Trials

Corrected Proof

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Published online 2019 July 29. **Review Article**

Amit D. Kandhare [1], Anwesha Mukherjee [1] and Subhash L. Bodhankar [1, *]

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Abstract

Context: Cisplatin is a widely used antineoplastic agent in the treatment of a wide range of malignancies although it is associated with nephrotoxicity. Much clinical evidence supports the use of antioxidant supplements in the prevention of cisplatin-induced nephrotoxicity (CIN). However, conflicting evidence makes us unable to provide any robust results for antioxidants use against CIN.
Objectives: The study aimed to investigate the efficacy of antioxidant supplements on CIN through a comprehensive meta-analysis of randomized controlled trials.
Data Sources: A systematic literature search was conducted in PubMed, EMBASE, Cochrane Library, CPCI-S (Conference Proceedings Citation Index-Science), ICTRP (International Clinical Trials Registry Platform), and Google Scholar until February 2017 by two independent researchers. Various outcomes such as serum creatinine, estimated glomerular filtration rate (eGFR), blood urea nitrogen (BUN), creatinine clearance, and incidence of CIN were assessed. All statistical analyses were performed using RevMan V.5.3
Results: Overall, 672 patients were identified from 10 studies of whom 330 (49.10%) patients received antioxidant treatment. Antioxidant treatment showed a significant reduction in serum creatinine (SMD: -3.40, 95% CI: -5.47 to -1.33, P = 0.001), BUN (SMD = -5.96, 95% CI: -10.07 to -1.86, P = 0.004), and eGFR (SMD = -3.77, 95% CI: -6.16 to -1.38; P = 0.002) when compared to the control group.
Conclusions: Antioxidant treatment is associated with a reduced risk of CIN. It also has important clinical implications for CIN patients who are not responding to other therapies such as hydration, diuresis, or magnesium supplementation.

Keywords: Antioxidant, Cisplatin, Meta-Analysis, Nephrotoxicity, Systematic Review

1. Context

Cisplatin (cis-diamminedichloroplatinum [II]; CDDP; Platinol) is a platinum-based antineoplastic agent that serves a highly effective treatment regimen for an array of malignancies such as head and neck cancer, cervical cancer, soft-tissue neoplasms, squamous cell cancer, non-small cell lung cancer, gastric cancer, testicular cancer, bladder cancer, and ovarian cancer (1, 2). Despite its effectiveness, the clinical use of cisplatin is compromised in up to 85% of cases due to severe side effects including ototoxicity, nephrotoxicity, bone marrow toxicity, gastrointestinal toxicity, and peripheral neuropathy (3). The prevalence of cisplatin nephrotoxicity was reported as 34.1% among various cancer patients in a study (4) and the incidence of cisplatin-induced nephrotoxicity was around 30% - 40% in another study (5), which was dose-dependent and usually reversible. It has been reported that CDDP, as a platinum-based alkylating compound, has an ability to interact with DNA to form interstrand cross-links and intrastrand bifunctional N-7 DNA adducts at d(GpG) and d(ApG) (6). The formation of these adducts can result in DNA damage, oxidative stress, protein synthesis inhibition, and mitochondrial dysfunction (7).

The current treatment strategy for cisplatin-induced nephrotoxicity (CIN) manifestations primarily includes supportive care with sodium chloride or bicarbonate volume expansion, metformin withdrawal, administration of various agents such as nonsteroidal anti-inflammatory drugs, angiotensin-converting enzyme inhibitors, angiotensin II-receptor blockers and statins, and reduced volume of contrast media (8). CIN can be ameliorated using oral hydration therapy (9) or magnesium supplementation (7); however, it is reversible and does not completely prevent CIN. Dialysis has been successfully implicated in the management of various features of CIN

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A Systematic literature review of fenugreek seed by using ToxRTool;evidence from preclinical & clinical studies

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A systematic literature review of fenugreek seed toxicity by using ToxRTool: evidence from preclinical and clinical studies

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Abstract

Fenugreek (*Trigonella foenum graecum*) seed extract is a bioactive ingredient of many food supplements. Hence, there is a need for systematic assessment of the quality of published toxicological studies for its use in human health, hazard consideration, and risk assessment. The aim of the present investigation was to determine the reliability of published toxicological studies of fenugreek seed by using ToxRTool (Toxicological data reliability assessment tool). A comprehensive systematic literature search was conducted in PubMed, EMBASE, Cochrane Library, CPCI-S, ICTRP, Ovid, and Google Scholar till October 2018. Each identified study was evaluated for its quality using the ToxRTool with outcomes such as combined score, weighted score, and reliability category by three independent raters. Correlations of various criteria groups with the combined score were evaluated by Pearson correlation and Kendall rank correlation coefficient. Inter-rater consistency was measured by Cronbach's alpha coefficient. The database searches initially yielded 436 results, of which 391

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Therapeutic Potential of Morin in Ovalbumin-induced Allergic Asthma Via Modulation of SUMF2/IL-13 and BLT2/NF - kB Signalling Pathway

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RESEARCH ARTICLE

Therapeutic Potential of Morin in Ovalbumin-induced Allergic Asthma Via Modulation of SUMF2/IL-13 and BLT2/NF-kB Signaling Pathway

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ARTICLE HISTORY

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Abstract: ***Background*:** Allergic asthma is a chronic immune-inflammatory disorder, characterized by airway inflammation and airway hyperresponsiveness (AHR). Morin is a natural flavonoid reported to exhibit inhibitory action against IgE-mediated allergic response.

***Aim*:** To determine the efficacy of murine model of ovalbumin (OVA)-induced AHR inhibition by morin and decipher the molecular mechanism involved.

***Materials and Methods*:** Sprague-Dawley rats were sensitized and challenged with OVA to induce AHR. Rats received treatment with morin (10, 30 and 100 mg/kg, p.o.) for the next 28 days.

***Results*:** Morin (30 and 100 mg/kg) significantly and dose-dependently attenuated ($p < 0.01$ and $p < 0.001$) OVA-induced alterations in pulse oxy and lung function test, increased bronchoalveolar lavage fluid cell counts, elevated total protein and albumin levels in serum, BALF, and lungs, increased serum total and OVA-specific IgE levels and, elevated oxidative stress levels in the lung. RT-PCR analysis revealed that morin treatment (30 and 100 mg/kg) significantly ($p < 0.001$) up-regulated SUMF2 mRNA expression in lungs whereas mRNA expressions of BLT2, NF-κB, and Th2-cytokine (TNF-α, IL-1β, IL-4, IL-6, and IL-13) were down-regulated significantly and dose-dependently ($p < 0.01$ and $p < 0.001$). Also, histologic and ultrastructural studies showed that morin significantly inhibited ($p < 0.001$) OVA-induced perivascular and peribranchial inflammatory infiltration and interstitial fibrosis.

***Conclusion*:** Morin exhibited inhibitory effect against OVA-induced allergic asthma by activation of SUMF2 which impeded IL-13 expression and in turn attenuated Th2-cytokines, BLT2, NF-κB, and IgE levels to ameliorate AHR. Thus, our findings suggested that morin could be considered as a potential alternative therapeutic agent for the management of allergic asthma.

Keywords: Airway hyperresponsiveness, asthma, leukotriene B4 receptor 2, Morin, NF-kB, sulfate-modifying factor 2, Th2 cytokines.

1. INTRODUCTION

Allergic asthma is the most prevalent chronic, immune-inflammatory disorder characterized by airway remodeling, inflammation and, airway hyperresponsiveness (AHR) [1]. According to World Health Organization, approximately 300 million people suffer from asthma worldwide and, the mortality is 180,000 deaths a year [2, 3]. Moreover, the prevalence of asthma is increasing in both developed and developing countries. In a year, the mean cost for asthma management is reckoned at $3,100 per patient (Boonpiyathad *et al*., 2016) which poses a significant economic burden on the healthcare systems calling for urgent implementation of cost-effective strategies.

Numerous evidence has suggested that imbalance in responses of T-helper type 1 (Th1)/T-helper type 2 (Th2) are classical factors for occurrence and progress of asthma [4-7]. It has been associated with an elevation in the production of Th2 cytokine (including interleukin (IL)-4, IL-5, and IL-13) from various Th2 cells (such as eosinophils, B-cells, and mast cells) and decrease in the production of Th1 cytokine [3]. IL-4 and IL-13 play important roles in the activation of B cell for synthesis of immunoglobulin (Ig)-E [8]. The crosslinking of IgE to high-affinity IgE receptors (FcεRI) on the surface of mast cells result in its activation and degranulation. This is followed by the release of an array of inflammatory mediators including histamine, cytokines, and leukotrienes, which lead to immediate bronchoconstriction [9].

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Hesperidin Ameliorates Bleomycin-InducedExperimental Pulmonary Fibrosis Via Inhibition OfTgf-B1/Smad3/Ampk And Iκbα/Nf-Kb Pathways

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HESPERIDIN AMELIORATES BLEOMYCIN-INDUCED EXPERIMENTAL PULMONARY FIBROSIS VIA INHIBITION OF TGF-B1/SMAD3/AMPK AND IKBA/NF-KB PATHWAYS

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ABSTRACT

Bleomycin (BLM) is a chemotherapeutic agent which is associated with Idiopathic pulmonary fibrosis (IPF) due to its chronic administration. Hesperidin, a bioflavonoid has been reported to possess antioxidant, anti-inflammatory, wound healing, and antiapoptotic potential. To evaluate the therapeutic potential of hesperidin against BLM-induced pulmonary fibrosis and decipher its possible mechanism of action. Intraperitoneal administration of BLM (6 IU/kg) caused induction of IPF in Sprague-Dawley rats. Rats were treated with hesperidin (25, 50, and 100 mg/kg, p.o.) for 28 days, followed by estimation of various parameters in bronchoalveolar lavage fluid (BALF) and lung. Hesperidin (50 and 100 mg/kg) administration significantly ameliorated ($p < 0.05$) alterations induced by BLM in lung index, percent oxygen saturation, serum ALP and LDH levels, BALF differential cell count, and lung function test. Elevated levels of oxido-nitrosative stress, hydroxyproline, and myeloperoxidase levels in BALF and lung were significantly decreased by hesperidin on day 14. Hesperidin significantly inhibited BLM-induced down-regulated lung Nrf2 and HO-1 as well as up-regulated TNF-α, IL-1β, IL-6, collagen-1, TGF-β, and Smad-3 mRNA expressions. Western blot analysis showed that alteration in lung NF-κB, IκBα, AMPK, and PP2C-α protein expressions were ameliorated by hesperidin on day 28. Furthermore, BLM induced histological and ultrastructural aberrations in the lung which were attenuated by hesperidin treatment. Hesperidin alleviates BLM-induced IPF via inhibition of TGF-β1/Smad3/AMPK and IκBα/NF-κB pathways which in turn ameliorate the modulation of oxido-inflammatory markers (Nrf2 and HO-1) and pro-inflammatory markers (TNF-α, IL-1β, and IL-6) to reduce collagen deposition during pulmonary fibrosis.

Keywords: AMPK, bleomycin, hesperidin, IκBα, NF-κB, Nrf2, pulmonary fibrosis, Smad3, TGF-β1

Abbreviations:
Adenosine monophosphate-activated protein kinase (AMPK), Alkaline Phosphatase (ALP), Bleomycin (BLM), Bronchoalveolar Lavage Fluid (BALF), Enhanced Pause (Penh), Expired Volume (EV), Frequency of breathing (f), Glyceraldehyde 3-phosphate dehydrogenase (GAPDH), Glutathione (GSH), Heme oxygenase 1 (HO-1), Hydroxyproline (HP), Idiopathic pulmonary fibrosis (IPF), Interleukins (IL's), Lactate Dehydrogenase (LDH), Malondialdehyde (MDA), Mothers against decapentaplegic homolog-3 (Smad-3), Myeloperoxidase (MPO), Nitric Oxide (NO), Non-phosphorylated AMPK (PP2C-α), Nuclear factor E2-related factor 2 (Nrf2), Nuclear factor-Kappa B (NF-κB), Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor-alpha (IκBα), Transforming Growth Factor-β (TGF-β), Transmission Electron Microscopy (TEM), Tumor Necrosis Factor-alpha (TNF-α).

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Acute and sub-chronic oral toxicity studies of hesperidin isolated from orange peel extract in Sprague Dawley rats

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Acute and sub-chronic oral toxicity studies of hesperidin isolated from orange peel extract in Sprague Dawley rats

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ABSTRACT

Citrus sinensis contains glycoside hesperetin-7-rhamnoglucoside (hesperidin) which harbor an array of therapeutic potentials including antioxidant, anticancer, and anti-inflammatory. However, a systematic examination of safety is needed before its utilization. Hence, the present investigation is aimed to evaluate acute and sub-chronic toxicity of hesperidin isolated from the citrus fruit. Hesperidin (73%) was isolated from a methanolic extract of dried peel of the citrus fruit, characterized using FTIR, and standardized by HPLC. Its acute oral toxicity (AOT) and sub-chronic toxicity studies were carried out in Sprague-Dawley rats. Hesperidin (5000 mg/kg) showed 10% mortality in AOT. In sub-chronic toxicity study, hesperidin (250 and 500 mg/kg) did not induce any abnormalities in body weight, food consumption, clinical signs, ophthalmological and neurological observations, urine analysis, hematology, clinical chemistry, organ weights, and gross pathology. However, hesperidin (1000 mg/kg) showed significant ($p < 0.05$) alterations in body and organ weights, hematology, clinical chemistry, and tissue histopathology. To conclude, hesperidin has median lethal dose (LD_{50}) of 4837.5 mg/kg, and Low Observed Adverse Effect Level (LOAEL) at 1000 mg/kg for both male and female Sprague-Dawley rats. Thus, hesperidin isolated from citrus fruit showed a good safety profile in animal study.

1. Introduction

Natural products are an essential source of drugs for management of various diseases. Numerous evidence have suggested that herbal therapeutic moieties are better in terms of safety and efficacy compared to synthetic chemicals (Aniagu et al., 2004; Delaney, 2007; Joshua Allan et al., 2007; Saad et al., 2006). Therefore, with the development of new medical technology, research on isolated compounds from natural and biological resources have garnered much attention. Various natural substances have wide applications in an array of fields including medicine, functional health food, and home remedies (Jakkula et al., 2004; World Health Organization, 2002; Yang et al., 2009).

In developing countries, majority of the population rely on folk medicine obtained from natural sources for the treatment of various diseases. However, these plants contain diverse bioactive compounds that bear the potential to cause an adverse effect (Bent and Ko, 2004). In the Indian subcontinent, 'Ayurveda' has been widely used as an 'alternative medicine' for the past 3000 years or so. Recently, Ayurveda has attained more focus in the field of medicine due to its safety and frequency of success. Moreover, it has been shown to provide excellent clinical results with lower adverse effects than Western medicine (Corns, 2003; Mashour et al., 1998; Yin et al., 2013). But before these traditional medicines can be transformed into modern drugs, significant toxicological information is needed. However, in recent years, the toxicological studies of natural products have rarely been reported. Therefore, there is a need to conduct and document systematic safety studies which examine these substances for their possible toxic effects.

Citrus sinensis (L.) Osbeck, (family: Rutaceae), commonly known as Sweet orange, is a citrus fruit which is largely cultivated in India and various countries around the world. It serves as a major source of vitamin C, potassium, folic acid, and pectin. It is widely consumed as fresh fruit, and juice while the peel is often discarded as waste. According to a report by the United States Department of Agriculture, the global production of this citrus fruit is 82 million tons per year (United States Department of Agriculture, 2018) of which 34% is used for juice production which yields about 44% peel as a by-product (Rafiq et al., 2016). It is to be noted that these peels possess an array of secondary components including polyphenols, vitamins, amino acids, minerals, dietary fibers, essential oils, pectin, flavonoids, vitamin C, and carotenoids. Thus, these have a broad range of activities including

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Development and Validation of RP-HPLC and UV Spectrophotometric Absorptivity Method for Simultaneous Estimation of Cyclobenzaprine hydrochloride and Aceclofenac in Pharmaceutical dosage form

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Development and Validation of RP-HPLC and UV-Spectrophotometric Absorptivity Method for Simultaneous Estimation of Cyclobenzaprine hydrochloride and Aceclofenac in Pharmaceutical dosage form

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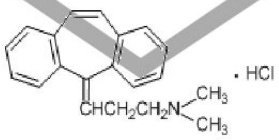
***Abstract*: The objective of present research is to develop a simple, sensitive, linear, precise and accurate RP-HPLC and UV-Spectrophotometric method for simultaneous estimation of Cyclobenzaprine hydrochloride and Aceclofenac in bulk and tablet formulation as developed and validated. UV-Spectrophotometric method Calibration plot were linear R^2=0.9996 over the concentration range 1-5µg/ml for Cyclobenzaprine hydrochloride, R^2= 0.9995 for the Aceclofenac 13-65µg/ml. And Chromatographic conditions used are stationary phase Inertsil ODS column (250 × 4.6 mm×5µ) (5µm particle size) the mobile phase Methanol: 10mm KH_2PO_4 Buffer (Ph-3) (70:30) and flow rate was maintained 0.9ml/min, detection wavelength was 220nm. The retention times were 4.7min and 2.9 min for Cyclobenzaprine hydrochloride and Aceclofenac respectively. Calibration plot were linear R^2 = 0.9996 over the concentration range 3-15µg/ml for Cyclobenzaprine hydrochloride, R^2 = 0.9994 for the Aceclofenac 40-200µg/ml. No interference from any component of pharmaceutical dosage form was observed. The proposed method has been validated as per ICH guidelines, validation studies revealed that method id specific, rapid, reliable and reproducible. The developed method successfully employed for routine quality control analysis in the combined pharmaceutical dosage form.**

***Keywords*: Cyclobenzaprine hydrochloride and Aceclofenac, UV- Spectrophotometric, RP-HPLC Method.**

I. INTRODUCTION:-

Cyclobenzaprine hydrochloride is a once daily extended release skeletal muscle relaxant which relieves muscle spasm of local origin without interfering with muscle function. The exact mechanism of action is unknown. The IUPAC name is 3-(5H-Dibenzo [A, D] Cyclohepten-5-Ylidene) N, N-Dimethyl-1-Propanamine Absorption: Immediate-release (IR) mean oral bioavailability ranges from 33% to 55. Distribution: About 93% is plasma protein-bound. Metabolism: During first pass through GI tract and liver, drug and metabolites undergo enterohepatic recycling. Cyclobenzaprine is eliminated quite slowly, with an effective half-life of 18 hours (range 8-37 hours; n=18); plasma clearance is 0.7 L/min. Metabolites excreted in the urine are likely water-soluble glucuronide conjugates.



Cyclobenzaprine Hydrochloride

Aceclofenac is a non-steroidal agent with marked anti-inflammatory and analgesic properties. The mode of action of aceclofenac is largely based on the inhibition to prostaglandin synthesis. Aceclofenac is a potent inhibitor of the enzyme cyclo-oxygenase, which is involved in the production of prostaglandins. The IUPAC name is [(2, 6-dichlorophenyl) amino] phenylacetoxyacetic acid. After oral administration, aceclofenac is rapidly absorbed and the bioavailability is almost 100%. Peak plasma concentrations are reached approximately1.25 to 3 hours. Aceclofenac is highly protein-bound (> 99.7%). Aceclofenac penetrates into the synovial fluid where the concentrations reach approximately 60%of those in plasma. Aceclofenac is probably metabolized via CYP2C9 to the main metabolite 4-hydroxyaceclofenac. The mean plasma elimination half-life is 4-4.3 hours.Approximately two-thirds of the administered dose is excreted via the urine, analysis conjugated hydroxymetabolites.

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A Review - Corona Virus (Covid-19)

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A REVIEW - CORONA VIRUS (COVID-19)

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***Abstract*: An acute respiratory disease, caused by a novel coronavirus (SARS-CoV-2, previously known as 2019-nCoV), the coronavirus disease 2019 (COVID-19) has spread throughout China and received worldwide attention. On 30 January 2020, World Health Organization (WHO) officially declared the COVID-19 epidemic as a public health emergency of international concern. The emergence of SARS-CoV-2, since the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002 and Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012, marked the third introduction of a highly pathogenic and large-scale epidemic coronavirus into the human population in the twenty-first century. As of 1 March 2020, a total of 87,137 confirmed cases globally, 79,968 confirmed in China and 7169 outside of China, with 2977 deaths (3.4%) had been reported by WHO. Meanwhile, several independent research groups have identified that SARS-CoV-2 belongs to β-coronavirus, with highly identical genome to bat coronavirus, pointing to bat as the natural host. The novel coronavirus uses the same receptor, angiotensin-converting enzyme 2 (ACE2) as that for SARS-CoV, and mainly spreads through the respiratory tract. Importantly, increasingly evidence showed sustained human-to-human transmission, along with many exported cases across the globe. The clinical symptoms of COVID-19 patients include fever, cough, fatigue and a small population of patients appeared gastrointestinal infection symptoms. The elderly and people with underlying diseases are susceptible to infection and prone to serious outcomes, which may be associated with acute respiratory distress syndrome (ARDS) and cytokine storm.Currently, there are few specific antiviral strategies, but several potent candidates of antivirals and repurposed drugs are under urgent investigation. In this review, we summarized the latest research progress of the epidemiology, pathogenesis, and clinical characteristics of COVID-19, and discussed the current treatment and scientific advancements to combat the epidemic novel coronavirus.**

***Keywords*: COVID-19, β-coronavirus, SARS-CoV, canine coronavirus (CCoV).**

BACKGROUND:

In December 2019, a cluster of pneumonia cases, caused by a newly identified β-coronavirus, occurred in Wuhan, China. This coronavirus, was initially named as the 2019- novel coronavirus (2019-nCoV) on 12 January 2020 by World Health Organization (WHO). WHO officially named the disease as coronavirus disease 2019 (COVID- 19) and Coronavirus Study Group (CSG) of the International Committee proposed to name the new coronavirus as SARS-CoV-2, both issued on 11 February 2020. The Chinese scientists rapidly isolated a SARS-CoV-2 from a patient within a short time on 7 January 2020 and came out to genome sequencing of the SARS-CoV-2 [6]. As of 29 March 2020, a total of 81,439 cases of COVID-19 have been confirmed in mainland China including 3,300 deaths [7]. Studies estimated the basic reproduction number (R0) of SARS-CoV-2 to be around 2.2 [8], or even more (range from 1.4 to 6.5) [9], and familial clusters of pneumonia [10] outbreaks add to evidence of the epidemic COVID-19 steadily growing by human-to-human transmission.

INTRODUCTION:

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person. The virus that causes COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China. [1]

CORONAVIRUSES:

Coronaviruses are a group of related viruses that cause diseases in mammals and birds. In humans, coronaviruses cause respiratory tract infections that can be mild, such as some cases of the common cold (among other possible causes, predominantly rhinoviruses), and others that can be lethal, such as SARS, MERS, and COVID-19. Symptoms in other species vary: in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. There are yet to be vaccines or antiviral drugs to prevent or treat human coronavirus infections.[10] Coronaviruses constitute the subfamily ***Orthocoronavirinae***, in the family *Coronaviridae*, order *Nidovirales*, and realm *Riboviria*. They are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry. The genome size of coronaviruses ranges from approximately 27 to 34 kilobases, the largest among known RNA viruses. The name *coronavirus* is derived from the Latin *corona*, meaning "crown" or "halo", which refers to the characteristic appearance reminiscent of a crown or

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Targeted Drug Delivery – From Magic Bullet to Nanomedicine

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Targeted Drug Delivery – From Magic Bullet to Nanomedicine

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Abstract:

Targeted medication delivery has in fact substantially improved from conventional techniques to more complex strategies like the magic pill and nanomedicine. The idea of delivering a medicine to a specific target in the body while limiting its effects on healthy tissues is known as the "magic bullet" theory. This idea can target therapeutic effects only to the desired site while differentiating between healthy and diseased cells. Targeted drug distribution is one of the applications of nanotechnology in nanomedicine. Controlled drug release provided by nanoparticles ensures long-lasting therapeutic levels and lowers systemic toxicity. The blood-brain barrier is just one example of a biological barrier that they can get through, making it possible to deliver drugs to previously unreachable places. The review article highlights targeted drug delivery's uses in treating cancer, neurological disorders, and cardiovascular ailments, among other diseases. It emphasizes how increasing therapeutic results and reducing off-target consequences might improve illness treatment through targeted medication delivery strategies.

Keywords: Magic Mullet, Blood Brain Barrier, Inaccessible Area, Revolutionize Disease, Off-Target Effect.

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Cancer Chemotherapy with Peptides & Peptidomimetics drug & Peptide based Vaccine

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Cancer Chemotherapy with Peptides and Peptidomimetics Drug and Peptide Based-Vaccines

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Abstract— *A summary of the current status of the application of peptidomimetics in cancer therapeutics as an alternative to peptide drugs is provided. Only compounds that are used in therapy or at least under clinical trials are discussed, using inhibitors of farnesyltransferase, proteasome and matrix metalloproteinases as examples. The design and synthesis of peptidomimetics are most important because of the dominant position peptide and protein-protein interactions play in molecular recognition and signalling, especially in living systems. The design of peptidomimetics can be viewed from several different perspectives and peptidomimetics can be categorized in a number of different ways. Study of the vast literature would suggest that medicinal and organic chemists, who deal with peptide mimics, utilize these methods in many different ways. Conventional methods used to treat cancer, from non-specific chemotherapy to modern molecularly targeted drugs have generated limited results due to the complexity of the disease as well as lack of molecular classes that can be developed into treatments rapidly, easily and economically. Peptidomimetics that are easy to synthesize and optimize and has been studied in different oncology applications as great biologically amenable compounds and can be considered as a promising alternative molecular class for anticancer drug developments. Peptide can be utilized directly as a cytotoxic agent through various mechanisms or can act as a carrier of cytotoxic agents and radioisotopes by specifically targeting cancer cells. Peptide-based hormonal therapy has been extensively studied and utilized for the treatment of breast and prostate cancers. Tremendous amount of clinical data is currently available attesting to the efficiency of peptide-based cancer vaccines.*

Keywords— *Farnesyltransferase inhibitors, Ras, Metal-loproteinase inhibitors, Angiogenesis, Proteasome inhibitors.*

I. Introduction

Mortality from cancer is about to surpass that from cardiovascular diseases in near future. About 7 million people die from cancer-related cases per year, and it is estimated that there will be more than 16 million new cancer cases every year by 2020 [1, 2]. Cancer is characterized by uncontrolled division of cells and the ability of these cells to invade other tissues leading to the formation of tumor mass, vascularization, and metastasis (spread of cancer to other parts of the body) [3]. Though angiogenesis (growth of new blood vessels from pre-existing vessels) is a normal and vital process in growth and development, it is also a fundamental step in the transition of b tumors from adormant state to a malignant one [4]. Chemotherapy is one of the major approaches to treat cancer by delivering a cytotoxic agent to the cancer cells. The main problem with the conventional chemotherapy is the inability to deliver the correct amount of drug directly to cancer cells without affecting normal cells [5]. Drug resistance, altered bio distribution, biotransformation, and drug clearance are also common problems [5]. Targeted Mortality from cancer is about to surpass that from cardiovascular diseases in near future. About 7 million people die from cancer-related cases per year, and it is estimated that there will be more than 16 million new cancer cases every year by 2020 [1, 2]. Cancer is characterized by uncontrolled division of cells and the ability of these cells to invade other tissues leading to the formation of tumor mass, vascularization, and metastasis (spread of cancer to other parts of the body) [3]. Though angiogenesis (growth of new blood vessels from pre-existing vessels) is a normal and vital process in growth and development, it is also a fundamental step in the transition of tumors from a dormant state to a malignant one [4]. The "biologics" treatment option against cancer includes the use of proteins, monoclonal antibodies, and peptides. The monoclonal antibodies (mAbs) and large protein ligands have two major limitations compared to peptides: poor delivery to tumors due to their large size and dose-limiting toxicity to the liver and bone marrow due to nonspecific uptake into the reticulo endothelial system. The use of such macromolecules has therefore been restricted to either vascular targets present on the luminal side of tumor vessel endothelium or hematological malignancies [6–11]. Peptides possess many advantages such as small size, ease of synthesis and modification, tumor penetrating ability, and good biocompatibility [12, 13]. Peptide degradation by proteolysis can be prevented by chemical modifications such as incorporation of D-amino acids or cyclization [14]. Over the years peptides have been evolved as promising therapeutic agents in the treatment of cancer, diabetes, and cardiovascular diseases, and application of peptides in a variety of other therapeutic areas is growing rapidly. Currently there are about

Jeevan R. Rajguru, Sonali A. Nagare, Ashish A. Gawai, Amol G. Jadhao, and Mrunal K. Shirsat, "Cancer Chemotherapy with Peptides and Peptidomimetics Drug and Peptide Based-Vaccines," *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 2, Issue 2, pp. 21-30, 2019.

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A study to assess the knowledge regarding hand hygiene practice among secondary school going children in selected schools of Pune city

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Sneha Sankpal Desai, Sampurna Kar, Shital Kshirsagar, Shinthoi Chanu, Prajakta Bansode and Kunal Pandya

Abstract
Hand hygiene practice is the single most effective way to prevent the spread of germs. Good hand hygiene reduces the risk of flu, food poisoning and health care associated infections passed from person to person. Although maintaining hand hygiene practice is very important for all of us but it is more important to teach the children about hand hygiene practice because they are at increased risk for getting infection as they are grouped together and their immunity system is not fully developed.
A cross-sectional survey was conducted in Pune (West of India). 150 samples were collected from schools for the study. The questionnaire consist of 30 items and two section (demographic information and knowledge score about hand hygiene practice).
Demographic data of the sample was statistically analysed by using frequency and percentage it was observed that (2.67%) children are having poor knowledge, (8%) children are having average knowledge, (21.33%) children are having good knowledge and (68%) children are having excellent knowledge of hand hygiene practice.
There is no association between knowledge and selected demographic variables (Age, Gender, Mother's education, Father's education, Mother's occupation, Father's occupation, from where did children learn about hand hygiene practice? How many times a day children wash their hands?)

Keywords: Hand hygiene, risk of flu, Pune

Introduction
Hand washing or hand hygiene is the act of cleaning one's hands with or without the use of water or another liquid, or with use of soap for the purpose of removing soil, dirt or micro-organisms. Hand washing is the single most effective way to prevent the spread of germs or micro-organisms which prevent communicable diseases. It is easy to learn how to control the spread of infection by washing the germs away.
The aim of hand washing is to remove micro-organisms from the hands preventing their potential transfer. It is known that organism survives and multiply on human hands, creating the opportunity to infect the others or the host.
Hand washing reduces the number of transient organisms on the skin surface. Although hands cannot be sterilized, most transient organisms can be removed by thirty seconds of proper scrubbing with soap and water.

Need of the study
The significance of hand washing in patients care was conceptualized in the early 19th century. Labarraque provided the first evidence that hand decontamination can markedly reduce the incidence of puerperal fever and maternal mortality.
Semmelweis worked in the Great hospital in Vienna in the 1840s. There was two maternity clinics in the hospital. The first clinic was attended by medical students, who moved straight from autopsy rooms to the delivery suit and had an average maternal mortality rate due to puerperal fever of about 10 percent. The second clinic, attended by midwives had a maternal mortality of only 2 percent. He instituted a policy of washing hands with chlorinated lime for those leaving the autopsy room, following which the rate of maternal mortality dropped ten-folds, comparable to the second clinic.

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Drug- Excipient Interactions Study

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Authors Name:	Mr. Shiddesh D. Gawari , Ms.Sonali B. Jadhav , Dr. Hemant V. Kambale , Dr. Vivek M. Satpute , Santosh A. Waghmare
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Abstract:	Excipients are included in dosage forms to aid manufacture, administration or absorption. Although considered pharmacologically inert, excipients can initiate, propagate or participate in chemical or physical interactions with drug compounds, which may compromise the effectiveness of a medication. Excipients are not exquisitely pure. Even for the most commonly used excipients, it is necessary to understand the context of their manufacture in order to identify potential active pharmaceutical ingredients interactions with trace components. Chemical interactions can lead to degradation of the active ingredient, thereby reducing the amount available for therapeutic effect. Physical interactions can affect rate of dissolution, uniformity of dose or ease of administration. Understanding the chemical and physical nature of excipients, the impurities or residues associated with them and how they may interact with other materials, or with each other, forewams the pharmaceutical technologist of possibilities for undesirable developments. The potential physical and chemical interactions between drugs and excipients can affect the chemical, physical, therapeutical properties and stability of the dosage form. The present review contains a basic mode of drug degradation, mechanism of drug- excipient interaction like physical, chemical and biopharmaceutical. Different Thermal and Non-thermal method of analysis, Tools and software for incompatibility is also discussed. Once the type of interaction is determined we can take further steps to improve the stability of drug and dosage form. From review, we conclude that consequent use of thermal and non-thermal method provide data for drug- excipient interaction which can further help in selection of excipient for the development of stable dosage form.
Keywords:	Excipient, Drug, Interaction, Physical, Chemical
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Herbal Medicines and Screening Models for Hepatoprotective Agents

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A REVIEW: HERBAL MEDICINES AND SCREENING MODELS FOR HEPATOPROTECTIVE AGENTS

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ABSTRACT

Liver is the largest gland present in human body. The function of this vital organ includes storage of glycogen, vitamins and minerals, enzyme activation, metabolism of carbohydrate, proteins and detoxification as well as purification process. Liver regulates chemical levels in blood and forms excretory material that is bile. All the blood leaving the stomach and intestine passes through liver. Chronic alcohol consumption, exposure to toxic chemicals like paracetamol, tetracycline, anti-TB drugs, NSAIDS, chemotherapeutic agents damage the hepatocytes. Liver diseases are major health and challenging to health care professions and pharmaceutical industry. Therefore there is need to study the hepatoprotective agents. Modern medicine have provided many medicaments that cure liver diseases but compared to this herbal medicine is preferred due to its cost effectiveness as well as minimal side effects and safe approach. The aim of this review is compiling information of different medicinal plants with their hepatoprotective activity on various models of hepatotoxicity.

KEYWORDS: Liver, Hepatotoxic agents, Medicinal herbs as hepatoprotective agents, Screening models.

INTRODUCTION

The Liver is the largest gland in a human body, situated in the right side of upper abdominal cavity. The cells of the liver called hepatocytes plays vital functions like;

1. Synthesis of proteins, biles,
2. Stores glycogen, vitamins, iron,
3. Metabolizes toxic chemicals and drugs

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Elucidation of Molecular Mechanism Involved in Nephroprotective Potential of Naringin in Ethylene Glycol-Induced Urolithiasis in Experimental Uninephrectomized Hypertensive Rats

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Elucidation of Molecular Mechanism Involved in Nephroprotective Potential of Naringin in Ethylene Glycol-Induced Urolithiasis in Experimental Uninephrectomized Hypertensive Rats

Jing LIU [1], Xian Cheng HAN [2], Dan WANG [3], Amit D. KANDHARE [4], Anwesha A. MUKHERJEE-KANDHARE [4], Subhash L. BODHANKAR [4] & Kun Ming WANG [5] *

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SUMMARY. **The objective of present investigation was to evaluate the nephroprotective potential of naringin against ethylene glycol (EG)-induced urolithiasis in experimental uninephrectomized hypertensive rats. EG (0.75% in drinking water) was used to induce urolithiasis in uninephrectomized hypertensive rats. Rats were treated with either naringin (20, 40, and 80 mg/kg, p.o.) for 28 days. Chronic administration of EG resulted in significant alterations ($p < 0.05$) in serum and urinary parameters (urea nitrogen, uric acid, creatinine, sodium, calcium, and LDH) whereas, administration of naringin (40 and 80 mg/kg) significantly attenuated ($p < 0.05$) these alterations. Naringin also significantly attenuated ($p < 0.05$) EG-induced hemodynamic and electrocardiographic abnormalities. Elevated levels of cardiac and renal MDA and nitric oxide and decreased levels of SOD and GSH were significantly restored ($p < 0.05$) by naringin treatment. RT-PCR analysis revealed that naringin significantly inhibited ($p < 0.05$) EG-induced upregulated mRNA expressions of renal KIM-1, NGAL, bikunin, and iNOs as well as down-regulated mRNA expressions of eNOs and OPN. Histological aberrations induced in renal and cardiac tissue after chronic administration of EG was significantly decreased ($p < 0.05$) by naringin. In conclusion, naringin exerts its nephroprotective effect against EG-induced via modulation of elevated oxidative stress and altered renal KIM-1, NGAL, bikunin, iNOs, eNOs, and OPN mRNA expressions.**

RESUMEN. El objetivo de la presente investigación fue evaluar el potencial nefroprotector de la naringina contra la urolitiasis inducida por etilenglicol (EG) en ratas hipertensas no nefrectomizadas experimentales. Se usó EG (0,75% en agua potable) para inducir urolitiasis en ratas hipertensas no nefrectomizadas. Las ratas se trataron con naringina (20, 40 y 80 mg/kg, p.o.) durante 28 días. La administración crónica de EG resultó en alteraciones significativas ($p < 0.05$) en los parámetros séricos y urinarios (nitrógeno ureico, ácido úrico, creatinina, sodio, calcio y LDH) mientras que la administración de naringina (40 y 80 mg/kg) atenuó significativamente ($p < 0.05$) estas alteraciones. La naringina también inhibió significativamente ($p < 0.05$) las alteraciones inducidas por EG en las anomalías hemodinámicas y electrocardiográficas. Los niveles elevados de MDA cardíaca y renal y óxido nítrico y la disminución de los niveles de SOD y GSH se restablecieron significativamente ($p < 0,05$) mediante el tratamiento con naringina. El análisis de RT-PCR reveló que la naringina inhibió significativamente ($p < 0.05$) las expresiones de ARNm reguladas por EG inducidas por KIM-1, NGAL, bikunina e iNOs, así como las expresiones de ARNm reguladas por disminución de eNO y OPN. Las aberraciones histológicas inducidas en el tejido renal y cardíaco después de la administración crónica de EG disminuyeron significativamente ($p < 0.05$) por acción de naringina. En conclusión, naringina ejerce su efecto nefroprotector contra la EG inducida por la modulación del estrés oxidativo elevado y la alteración de la expresión renal de KIM-1, NGAL, bikunina, iNOs, eNOs y ARNm de OPN.

INTRODUCTION

Nephrolithiasis or urolithiasis or urinary stone disease, which is the third most prevalent disorder of the urinary tract system affecting humankind since ancient times [1]. It has been well documented that calcium oxalate (CaOx) contributed approximately 80% to this urinary calculi disease which may result in hydronephrosis, obstruction, hemorrhage, and infection in the urinary system [2,3]. Albeit an array of sophisticated and comprehensive studies, the underlying pathogenesis of urolithiasis is still not well

KEY WORDS: bikunin, eNOs, ethylene glycol-induced urolithiasis, iNOs, kidney stone, naringin, osteopontin

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Development and Validation of RP-HPLC and UV-Spectrophotometric Method for Simultaneous Estimation of Teneligliptin Hydrobromide Hydrate and Metformin Hydrochloride in Pharmaceutical dosage form

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"Development and Validation of RP-HPLC and UV-Spectrophotometric Method for Simultaneous Estimation of Teneligliptin Hydrobromide Hydrate and Metformin Hydrochloride in Pharmaceutical dosage form"

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Abstract:

The objective of present research is to develop a simple, sensitive, linear, precise and accurate RP-HPLC and UV-Spectrophotometric method for simultaneous estimation of Teneligliptin Hydrobromide Hydrate and Metformin Hydrochloride in bulk and tablet formulation as developed and validated. UV-Spectrophotometric method Calibration plot were linear R^2 =0.9982 over the concentration range 0.8-1.6µg/ml for Teneligliptin Hydrobromide Hydrate, R^2 = 0.997 for the Metformin Hydrochloride 20-40µg/ml. And Chromatographic conditions used are stationary phase Grace C^{18} column (250mm × 4.6mm, 5µ particle size. The mobile phase Methanol: 10mm KH_2PO_4 Buffer (Ph-3) (70:30) and flow rate was maintained 0.8ml/min, detection wavelength was 240nm. The retention times were 4.5 min and 2.8 min for Teneligliptin Hydrobromide Hydrate and Metformin Hydrochloride respectively. Calibration plot were linear R^2 =0.9982 over the concentration range 1-5µg/ml for Teneligliptin Hydrobromide Hydrate, R^2 = 0.9981 for the Metformin Hydrochloride 25-125µg/ml. No interference from any component of pharmaceutical dosage form was observed. The proposed method has been validated as per ICH guidelines, validation studies revealed that method id specific, rapid, reliable and reproducible. The developed method successfully employed for routine quality control analysis in the combined pharmaceutical dosage form.

Keywords: Teneligliptin Hydrobromide, Metformin Hydrochloride, UV- Spectrophotometric, RP-HPLC Method, ICH Guideline.

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High Performance Liquid Chromatography-A Review

WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
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HIGH PERFORMANCE LIQUID CHROMATOGRAPHY-A REVIEW

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ABSTRACT

Chromatography is defined as a set of techniques which is used for the separation of constituents in a mixture. This technique involves two phases' stationary and mobile phases. High performance liquid chromatography (HPLC) is an important qualitative and quantitative technique, generally used for the estimation of pharmaceutical and biological samples. In these chromatography techniques, HPLC is one of the chromatographic techniques, which is mostly used analytical technique. Analytical Chemistry is the branch of Science that uses advance technologies in determining the composition by analytical technique. These strategies are fundamental for various purposes, including testing for quality control discharge, testing of solidness tests, testing of reference materials and to give information to bolster determinations. It is the most versatile, safest, dependable and fastest chromatographic technique for the quality control of drug components. This review article aims to focus on the different aspects of HPLC technique its principle, types, instrumentation and applications.

KEYWORDS: High Performance Liquid Chromatography, Mobile phase, Stationary phase.

INTRODUCTION

High Performance Liquid Chromatography which is also known as High Pressure Liquid Chromatography. The journey of chromatography was started first by Mikhail Tweet. (Russian botanist) in 19031It is a popular analytical technique used for the separation, identification and quantification of each constituent of mixture. In these chromatography techniques, HPLC is one of the chromatographic techniques, which is mostly used analytical

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Development and Validation of RP-HPLC and UV Spectrophotometric Absorptivity Method for Simultaneous Estimation of Cyclobenzaprine hydrochloride and Aceclofenac in Pharmaceutical dosage form

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Development and Validation of RP-HPLC and UV-Spectrophotometric Absorptivity Method for Simultaneous Estimation of Cyclobenzaprine hydrochloride and Aceclofenac in Pharmaceutical dosage form

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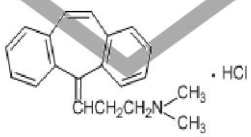
***Abstract*: The objective of present research is to develop a simple, sensitive, linear, precise and accurate RP-HPLC and UV-Spectrophotometric method for simultaneous estimation of Cyclobenzaprine hydrochloride and Aceclofenac in bulk and tablet formulation as developed and validated. UV-Spectrophotometric method Calibration plot were linear R^2=0.9996 over the concentration range 1-5µg/ml for Cyclobenzaprine hydrochloride, R^2= 0.9995 for the Aceclofenac 13-65µg/ml. And Chromatographic conditions used are stationary phase Inertsil ODS column (250 × 4.6 mm×5µ) (5µm particle size) the mobile phase Methanol: 10mm KH_2PO_4 Buffer (Ph-3) (70:30) and flow rate was maintained 0.9ml/min, detection wavelength was 220nm. The retention times were 4.7min and 2.9 min for Cyclobenzaprine hydrochloride and Aceclofenac respectively. Calibration plot were linear R^2 = 0.9996 over the concentration range 3-15µg/ml for Cyclobenzaprine hydrochloride, R^2 = 0.9994 for the Aceclofenac 40-200µg/ml. No interference from any component of pharmaceutical dosage form was observed. The proposed method has been validated as per ICH guidelines, validation studies revealed that method id specific, rapid, reliable and reproducible. The developed method successfully employed for routine quality control analysis in the combined pharmaceutical dosage form.**

***Keywords*: Cyclobenzaprine hydrochloride and Aceclofenac, UV- Spectrophotometric, RP-HPLC Method.**

I. INTRODUCTION:-

Cyclobenzaprine hydrochloride is a once daily extended release skeletal muscle relaxant which relieves muscle spasm of local origin without interfering with muscle function. The exact mechanism of action is unknown. The IUPAC name is 3-(5H-Dibenzo [A, D] Cyclohepten-5-Ylidene) N, N-Dimethyl-1-Propanamine Absorption: Immediate-release (IR) mean oral bioavailability ranges from 33% to 55. Distribution: About 93% is plasma protein-bound. Metabolism: During first pass through GI tract and liver, drug and metabolites undergo enterohepatic recycling. Cyclobenzaprine is eliminated quite slowly, with an effective half-life of 18 hours (range 8-37 hours; n=18); plasma clearance is 0.7 L/min. Metabolites excreted in the urine are likely water-soluble glucuronide conjugates.



Cyclobenzaprine Hydrochloride

Aceclofenac is a non-steroidal agent with marked anti-inflammatory and analgesic properties. The mode of action of aceclofenac is largely based on the inhibition to prostaglandin synthesis. Aceclofenac is a potent inhibitor of the enzyme cyclo-oxygenase, which is involved in the production of prostaglandins. The IUPAC name is [(2, 6-dichlorophenyl) amino] phenylacetoxyacetic acid. After oral administration, aceclofenac is rapidly absorbed and the bioavailability is almost 100%. Peak plasma concentrations are reached approximately1.25 to 3 hours. Aceclofenac is highly protein-bound (> 99.7%). Aceclofenac penetrates into the synovial fluid where the concentrations reach approximately 60%of those in plasma. Aceclofenac is probably metabolized via CYP2C9 to the main metabolite 4-hydroxyaceclofenac. The mean plasma elimination half-life is 4-4.3 hours.Approximately two-thirds of the administered dose is excreted via the urine, analysis conjugated hydroxymetabolites.

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Synthesis, Characterization and Antidiabetic Evaluation of Sulfonamide in Corporated with 1,3,4-Oxadiazole Derivatives

Original Article

Synthesis, Characterization and Antidiabetic Evaluation of Sulfonamide in Corporated with 1,3,4-Oxadiazole Derivatives

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ABSTRACT

Aim/Background: There is an increasing prevalence of diabetes mellitus throughout the world, and new compounds are necessary to combat this. While the current available antidiabetic therapies are long-term complicated and side effects-prone, this has led to a demand for more affordable, more effective methods of tackling diabetes. Research is focused on finding alternative medicinal remedies with significant antidiabetic efficacy as well as low adverse effects. This study synthesized, characterized, and evaluated anti-diabetic properties of synthetic sulphonamide hybrid of 1,3,4-oxadiazole derivatives. **Materials and Methods:** An *in vivo* antihyperglycemic evaluation of the sulphonamide hybrid of 1,3,4-oxadiazole derivatives was conducted using wistar rat models of type II diabetes derived from a two-step synthesis. Our study examined the effects of synthesized compounds on a model induced by a high-fat diet combined with streptozotocin and nicotinamide injection. For assessment of diabetic effects, Vildagliptin (10 mg/kg/day) was used as the standard drug. On day 14th, 1,3,4-oxadiazole derivatives (50 mg/kg/day) significantly lowered the blood sugar of hyperglycemic rats. **Results:** Due HFD STZ with Nicotinamide blood glucose level of wistar rat was increased (295 ± 8.2). After 14th day administration of derivatives random blood glucose level under controlled. A-III (220 ± 7.5 B) and A-IV (222 ± 3.62 B) were lowered random blood glucose levels on wistar rat. As compared to diabetes control (295 ± 8.5), derivatives of 1,3,4-oxadiazole are considered promising lead compounds. Compounds A-III and A-IV were found to be the most effective in lowering blood glucose, indicating the potential of these compounds as antidiabetic agents. **Conclusion:** Hybrids developed in this study provide new classes of anti-diabetic agents, and further optimization can be performed using this information.

Key words: *In vivo* study, 1,3,4-Oxadiazole, Sulfonamide derivative, anti-diabetic agents.

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INTRODUCTION

Hyperglycemia caused by defects in insulin secretion, insulin action, or both, is recognized as a diabetic condition.[1] A diabetic condition (DM) is a chronic disease characterized by hyperglycemia and is categorized into types 1 and 2 which may differ from each other in pathogenesis.[2] A diabetic condition is defined as high blood sugar levels (above 130 mg/dl) that cause long-term damage, dysfunction, and even failure to various body systems including the eyes, kidneys, nerves, heart, and vessels that carry blood.[3]

Several compounds containing heterocyclic rings are important components of antidiabetic pharmaceutical products. Nitrogen, sulfur, and oxygen containing heterocyclic compounds have attracted the attention of medicines chemical due to their wide range of biological applications. Among the heterocyclic family, 1,3,4-oxadiazole derivatives have shown many promising applications in pharmaceuticals.[4,5] Blood glucose stimulates the release of insulin from beta cells.[3] In addition to insulin deficiency and insulin resistance, there is also a genetic defect in the cells of the ß axis of the

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Synthesis, Characterization, and Evaluation of in vitro Antidiabetic Activity of Novel Pyrrolidine Sulphonamide Derivative

Int. J. Pharm. Investigation, 2021; 11(4) : 374-378 *Original Article*

Synthesis, Characterization, and Evaluation of *in vitro* Antidiabetic Activity of Novel Pyrrolidine Sulphonamide Derivative

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ABSTRACT

Background: Diabetes is a long-term illness characterized by high blood sugar levels. It is estimated that by 2045, there will be nearly 693 million diabetic patients worldwide, with half of the population remaining undiagnosed. Metformin, insulin, sulfonylureas, and thiazolidinediones were related to several risk factors, including hypoglycemia, bone fracture, weight gain, cardiovascular, renal, and other complications. In the present study, we have explored the DPP-IV inhibitors as a new class of antidiabetic drugs. **Objectives:** The goal of DPP-IV inhibitors is to raise levels of incretins (GLP-1 and GIP), which block glucagon release while boosting insulin secretion, slowing stomach emptying, and reducing blood glucose levels. **Methods:** A series of derivatives substituted on Oxadiazole of sulfonamide pyrrolidine were produced by reacting 1,2,4-oxadiazol and sulfonyl chloride at room temperature in the presence of ethanol and stirring until the reaction was complete. The compounds were characterized using IR, ^{1}H NMR, C^{13} NMR, mass spectroscopy, elemental analysis, and screened for *in vitro* assay of DPP-IV inhibition. **Results and Discussion:** The IC_{50} was calculated for compounds B-I, B-V, B-VI, B-XI, and B-XIII that inhibited enzymes significantly, IC_{50} values ranging from 19.65 ± 2.60 nM to 11.32 ± 1.59 nM, respectively, and Vildagliptin (4.79± 1.66 IC_{50} nM) was used as a standard. The most active derivative substituted Oxadiazole of pyrrolidine sulfonamide is B-XI (11.32 ± 1.59 IC_{50} nM) among all synthesized compounds. **Conclusion:** B-XI derivative has shown appreciable DPP-IVinhibitory action. The 1,2,4-oxadiazol-3-yl pyrrolidine-1-sulfonamide derivatives have shown anti-diabetic properties.

Key words: Pyrrolidine sulphonamide derivative, 1,2,4-oxadiazole, *In vitro* study, Antidiabetic, Dipeptidyl peptidase-4.

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INTRODUCTION

Diabetes is a group of chronic metabolic disorders caused by high blood sugar levels over a prolonged period.[1] Diabetes has become a global epidemic problem It was predicted that 451 million diabetics existed in 2017, with this Figure expected to increase to 693 million by 2045.[2] Most patients with type 2 diabetes, even when using anti-diabetic drugs, struggle to maintain sufficient glycemic regulation and develop microvascular and macrovascular diabetic complications.[3,4] Current diabetes therapy has lots of side effects.[5] The most frequent adverse events were hypoglycemia, stomach issues, and weight gain. DPP-IV inhibitors' possible advantages include a complementary mode of action with other anti-diabetic drugs, a desirable adverse-effect history, and a weight-neutral effect.[6,7]

By increasing endogenous GLP-1 levels, a DPP-IV inhibitor activates insulin and suppresses glucagon synthesis causing intestinal hypoglycemia.[8] Incretins and glucagon-like peptide-1 breakdown are suppressed by a DPP-IV inhibitor (GLP-1). DPP-IV inhibitor is an alternative diabetic therapy.[7,9,10] Because of their various pharmaceutical properties, five-member heterocyclic compounds, especially 1,2,4-Oxadiazole, have shown activity against a variety of diseases like Alzheimer's disease, parasitic worms (helminths) and other internal parasites, management and treatment of edematous and another non-edematous disease, infectious diseases, diabetes, pain and cramp, cardiovascular disease, HIV disease, tuberculosis, antioxidant, cancer, seizure disorders, inflammation of a joint.[11] Our efforts to enhance the efficacy, selectivity of the novel 1,2,4- oxadiazole derivative of pyrrolidine sulphonamide as DPP-IV inhibitors.

The sulfonamide moiety ($-SO_2NH_2$) is an active pharmacophore that the clinical and medicinal importance of sulfonamide drugs and compounds in the new drug discovery.[12] They exhibit a wide range of pharmacological activities, such as antimicrobial, antimalarial, anti-HIV, insulin-releasing antidiabetic, high ceiling diuretic, antithyroid, antitumor analgesic, and anti-inflammatory.[13-16] Some laboratories reported entities with sulfonamide portion; compounds 1 (IC_{50}; 6.7 nM) and 2 (IC_{50}; 39 nM) as potent DPP-IV inhibitors.[17] Omarigliptin (MK-3102) is sulfonamide containing moiety, which produces its antihyperglycaemic action by inhibiting the DPP-4 enzyme. Its pharmacokinetic studies have shown that it is suitable for once-a-week dosing, which makes it unique among the other DPP-4 inhibitors.[18,19] In this research we have designed novel 1,2,4- oxadiazole derivatives with sulfonamide and pyrrolidine-2-carbonitrile scaffolds specifically *in vitro* DPP-IV inhibitor assay as antidiabetic activity. In the continuation of our research to develop small molecules as biologically active antihyperglycaemic compounds, new derivatives having a pyrrolidine-2-carbonitrile-sulfonamide backbone hybrid were designed and synthesized in search for new potent DPP-4 inhibitors as antidiabetic agents.[20]

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Quality By Design Approaches To Analytical Method Development: A Review

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QUALITY BY DESIGN APPROACHES TO ANALYTICAL METHOD DEVELOPMENT: A MINI REVIEW

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ABSTRACT

(QBD) Quality by design is a systematic approach to and drug development. Predefined product specifications are done by, planning, developing, manufacturing respectively. Science risk-based management approaches are used for a predefined product. Analytical development method based on the same principle of QBD known as AQBD. The Traditional approach and analytical approach are specified in QBD. Analytical profile, risk Assessment, different critical quality attributes are used for various analytical techniques. Method validation and control strategy is put in place. Design space for the development of a product is required according to ICH Q8 guideline i.e. method operational design region. Analytical techniques are streamlined pathways for new drug development. Gives a new effective and unique approach.

KEYWORDS: Quality, Analytical QBD, CQA, MODR.

INTRODUCTION

ICH Q8 guidelines define QBD as, "A systematic approach to development that begins with predefined objectives and emphasizes product and process understanding and process control, based on sound science and quality risk management." QBD is nothing but the relation between predefined product specifications in order by planning, developing formulations,

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Genotoxicity: Malignancy, Damage To DNA

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GENOTOXICITY: MALIGNANCY, DAMAGE TO DNA; A VOLUMINOUS REVIEW

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ABSTRACT

A chemical agent that causes DNA damage is genotoxin. Germline mutation, somatic mutation lead to malignant transformation. The in-vivo, in-vitro test is performed for genotoxicity. The various assay is helped to detect DNA damage and is also used to evaluate the safety of environmental chemicals and to know the mechanism of action of suspected carcinogens. Many mutagens undergo metabolic activation for binding with DNA and DNA adduct in a reactive species can be detected in cells and human tissues by using various sensitive techniques. The characterization and the detection of DNA adducts provide causes of human cancer.

KEYWORDS: Carcinogens, mutagenicity, DNA adduct, immunoassay, genotoxin.

INTRODUCTION

Genotoxicity is a Latin term used for a chemical or biological agent having the ability to damage the DNA or genetic code of a cell, resulting in genetic mutation or carcinogenicity. A destructive effect on chromosomal material affects the integrity of the cell. Genotoxicity and mutagenicity both are different terms as all mutagens are genotoxic, but not all mutagenic compounds are genotoxic. Chemical substances and radiations are genotoxins. Indirect or

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Isolation and characterization of phytoconstituents from petroleum ether extract of Momordica cochinchinensis fruits

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Isolation and characterization of phytoconstituents from petroleum ether extract of *Momordica cochinchinensis* fruits

Mohan Agrawal, Dr. Anilkumar Aher, Dr. Subodh Pal and Dr. Deelip Derle

Abstract
The purpose of the study is to isolate and characterize the chemical constituents from fruits of *Momordica cochinchinensis*. The principal theme of the study is to develop applied chromatographic techniques for the separation, isolation and detection of the compounds. The petroleum ether extract of fruits of *Momordica cochinchinensis* was saponified and unsaponifiable matter was subjected to column chromatography and elution of column was carried out by Petroleum ether (100%) with increasing concentration of ethyl acetate for the separation of phytoconstituents. The isolated compounds were characterized and analyzed by physical characteristics, IR, NMR and Mass spectroscopy. Three known compounds lupeol, β-amyrin and β-sitosterol were determined for the first time from fruits of *Momordica cochinchinensis*. From the present study, it is concluded that the plant consists of phytosterols which can be isolated and characterized by chromatographical and spectroscopical method.

Keywords: *Momordica cochinchinensis,* phytosterols, lupeol, β-amyrin and β-sitosterol

Introduction
From thousands of years Natural products have been used by human societies. Natural sources have provided considerable value to the pharmaceutical industry over the past half century. Research studies leading to extraction, isolation and biological study of plant constituents have formed the major field of study. Various leads from plant sources were taken for discovering the new active therapeutic agents. Hence herbal medicine has played important role in managing the health conditions like diabetes, hypertension, inflammation, obesity, cancer, etc [1].
The plant *Momordica cochinchinensis* (Gac) is a Southeast Asian fruit found throughout the region from Southern China to Northeastern Australia, mostly Vietnam and throughout India. It grows on dioecious vines and usually collected from fence climbers or from wild plants [2]. It is reported that *Momordica cochinchinensis* Spreng, is one of the special fruits containing extraordinarily high levels of carotenoids, especially β -carotene (more than 16 mg/100 g) and lycopene (more than 50 mg/100 g), mainly in the red aril [3]. It is also reported to contain a protein that may inhibit the proliferation of cancer cells and also β-carotene with several phytonutrients, Vit-E, fatty acids, carbohydrates, flavonoidal glycosides [4].
Traditionally, Gac has been used as both food and medicine and promotes healthy vision by relief of dry eyes. It also possesses antioxidant, anti-microbial and antidiabetic properties. The seeds are considered to be good for cough and pains in the chest [5, 6].
But these studies are not enough for identifying and characterizing the bioactive compounds in the plant. The purpose of the study is to identify and characterize the bioactive principles from fruits of *Momordica cochinchinensis*.

Materials and Methods
Plant material: The fruits of *Momordica cochinchinensis* was collected from rural area of Kolkata. The herbarium of the *Momordica cochinchinensis* was authenticated by Botanical Survey of India, Pune Voucher specimen (MA 01) was deposited in library.

Preparation of Extracts: Fruits of *Momordica cochinchinensis* was extracted by Soxhlet extractor with Pet ether and macerated with ethanol and water successively.

Storage of Extracts: All the extracts were stored in tightly closed glass bottles in refrigerator at 2-8 ^{0}C.

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Analgesic activity of Momordica cochinchinensis and Momordica balsamina fruit extracts

ORIGINAL ARTICLE

Analgesic activity of *Momordica cochinchinensis* and *Momordica balsamina* fruit extracts

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Abstract

Introduction: In the present study, fruit extracts of *Momordica cochinchinensis (Cucurbitaceae)* and *Momordica balsamina (Cucurbitaceae)* were investigated for analgesic activity by Eddy's hot plate and Tail immersion method. **Materials and Methods:** The extracts were prepared successively using powdered material with petroleum ether, ethanol, and water, and concentrated under vacuum and were evaluated for analgesic activity at three dose level (100, 200, and 400 mg/kg). **Results and Discussion:** In Eddy's hot plate method, oral administration of petroleum ether extracts of both the plants at the dose of 200 mg/kg ($P < 0.01$) and 400 mg/kg ($P < 0.001$) significantly reduced the thermal stimulation. Analgesic activity of petroleum ether extracts of both plants at the dose of 400 mg/kg after 90 min was comparable to standard drug pentazocine (10 mg/kg). In tail immersion method, petroleum ether extract at the dose of 100 mg/kg ($P < 0.05$), 200 mg/kg, and 400 mg/kg ($P < 0.01$) and alcoholic extract at the dose of 200 mg/kg and 400 mg/kg ($P < 0.05$) of both plant material has shown significant analgesic activity and was comparable to standard drug pentazocine (10 mg/kg) after 90 min. **Conclusion:** It is concluded that petroleum ether extracts of both plant material have central analgesic effects.

Key words: Analgesic activity, Eddy's hot plate, *Momordica balsamina*, *Momordica cochinchinensis*, phytosterols, tail immersion

INTRODUCTION

Momordica is a genus of about 60 species of annual or perennial climbers herbaceous or rarely small shrubs belonging to the family Cucurbitaceae, natives of tropical and subtropical Africa, Asia and Australia.[1,2]

Momordica cochinchinensis (Gac) is a Southeast Asian fruit found throughout the region from Southern China to Northeastern Australia, mostly Vietnam and throughout India. It grows on dioecious vines and is usually collected from fence climbers or wild plants. The vines can be commonly seen growing on lattices at the entrances to rural homes or in gardens. It bears fruits annually and is found in local markets. The fruit becomes a dark orange color on ripening, and is typically round or oblong, maturing to a size of about 13 cm in length and 10 cm in diameter. The exterior skin is covered in small spines, while dark red interior consists of clusters of fleshy pulp and seeds.[3] Gac fruit, *M. cochinchinensis* Spreng, is one of the special fruits containing extraordinarily high levels of carotenoids, especially β-carotene (>16 mg/100 g), and lycopene (>50 mg/100 g), mainly in the red aril.[4] Conventionally, Gac has been used as both food and medicine and promotes healthy vision by relief of dry eyes. It also possesses antioxidant, antimicrobial, and antidiabetic properties. The seeds are considered to be good for cough and pains in the chest.[5-7]

Momordica balsamina Family: Cucurbitaceae is climber with bright green leaves bears striking orange to red spindle-shaped ripe fruit. Shurb is fairly common and widespread in Malaya, Australia, West Asia, Africa, America, and India (Sind, Gujarat, and Deccan). Conventionally used as a purgative agent, purification of blood and dissipate

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RESEARCH ARTICLE

Isolation, Characterization of Phytoconstituents from petroleum ether extract of *Momordica balsamina* fruits and its quantitative analysis by HPTLC

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ABSTRACT:
The purpose of the study is to isolate and characterize the chemical constituents from fruits of *Momordica balsamina.* The principal theme of the study is to develop applied chromatographic techniques for the separation, isolation and detection of the compounds. The petroleum ether extract of fruits of *Momordica balsamina* was saponified and unsaponifiable matter was subjected to column chromatography andelution of column was carried out by Petroleum ether (100%) with increasing concentration of ethyl acetate for the separation of phytoconstituents. The isolated compounds were characterized and analyzed by physical characteristics, IR, NMR and Mass spectroscopy. Four known compounds lupeol, ursolic acid, β-amyrin and β-sitosterol were isolated from fruits of *Momordica balsamina*. The isolated compounds were quantitatively analyzed by HPTLC. The concentration of lupeol, ursolic acid and β-amyrin was found to be 1.15%, 0.6% and 2.8%. From the present study, it is concluded that the plant consists of phytosterols and triterpene.

KEYWORDS: *Momordica balsamina,* Phytosterols, lupeol, ursolic acid, β-amyrin and HPTLC.

INTRODUCTION:
Momordica is a genus of annual or perennial climbers is essentially a native of tropical regions on Asia distributed extensively in China, Japan, South East Asia, Polynesia besides tropical Africa and South America. Many species of *Momordica* genus have been found to grow wildly in India, Bangladesh, Srilanka, Myanmar, Malay etc[1].

Momordica balsamina also refers to as balsam fruit or apple belongs to the family of *Cucurbitaceae.* It is a plant commonly used by local poultry farmers in Plateau State, Nigeria for general well being of birds. The Balsam apple is a climber or trailer with annuals stems attaining 4-5 m length. The fruit is orange yellow, beaked, 21/2 inches in length bursting and exposing red brown seeds. The species is closely related to *Momordicacharantia* (Bitter mellon) which occurs in areas of greater rainfall and whose properties and actions includes antibacterial, anti-inflammatory, anti-oxidant, antiviral, immunostilmulant, hypoglycemic etc[2-5]. Some *Momordica* species are already established as medicine and their marketed preparations are available and used in the treatment of different diseases. The rationale behind the study is to isolate, characterize and quantitatively determine the constituents present in petroleum ether extract of *Momordica balsamina* fruits.

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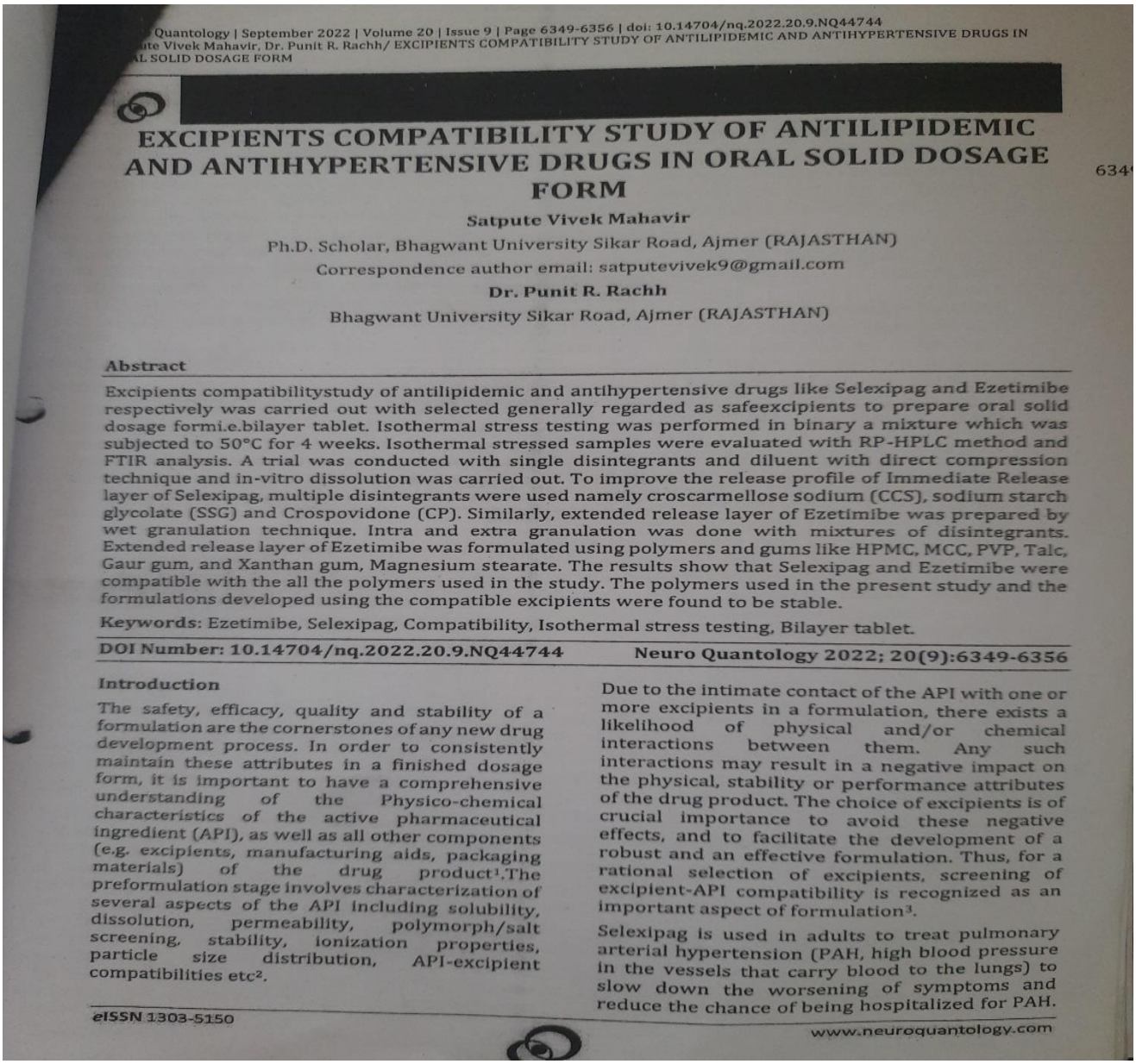
Excipients Compatibility Study Of Antilipidemic And Antihypertensive Drugs In Oral Solid Dosage Form



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ute Vivek Mahavir, Dr. Punit R. Rachh/ EXCIPIENTS COMPATIBILITY STUDY OF ANTILIPIDEMIC AND ANTIHYPERTENSIVE DRUGS IN
L SOLID DOSAGE FORM

EXCIPIENTS COMPATIBILITY STUDY OF ANTILIPIDEMIC AND ANTIHYPERTENSIVE DRUGS IN ORAL SOLID DOSAGE FORM

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Abstract

Excipients compatibilitystudy of antilipidemic and antihypertensive drugs like Selexipag and Ezetimibe respectively was carried out with selected generally regarded as safeexcipients to prepare oral solid dosage formi.e.bilayer tablet. Isothermal stress testing was performed in binary a mixture which was subjected to 50°C for 4 weeks. Isothermal stressed samples were evaluated with RP-HPLC method and FTIR analysis. A trial was conducted with single disintegrants and diluent with direct compression technique and in-vitro dissolution was carried out. To improve the release profile of Immediate Release layer of Selexipag, multiple disintegrants were used namely croscarmellose sodium (CCS), sodium starch glycolate (SSG) and Crospovidone (CP). Similarly, extended release layer of Ezetimibe was prepared by wet granulation technique. Intra and extra granulation was done with mixtures of disintegrants. Extended release layer of Ezetimibe was formulated using polymers and gums like HPMC, MCC, PVP, Talc, Gaur gum, and Xanthan gum, Magnesium stearate. The results show that Selexipag and Ezetimibe were compatible with the all the polymers used in the study. The polymers used in the present study and the formulations developed using the compatible excipients were found to be stable.

Keywords: Ezetimibe, Selexipag, Compatibility, Isothermal stress testing, Bilayer tablet.

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Introduction

The safety, efficacy, quality and stability of a formulation are the cornerstones of any new drug development process. In order to consistently maintain these attributes in a finished dosage form, it is important to have a comprehensive understanding of the Physico-chemical characteristics of the active pharmaceutical ingredient (API), as well as all other components (e.g. excipients, manufacturing aids, packaging materials) of the drug product[1].The preformulation stage involves characterization of several aspects of the API including solubility, dissolution, permeability, polymorph/salt screening, stability, ionization properties, particle size distribution, API-excipient compatibilities etc[2].

Due to the intimate contact of the API with one or more excipients in a formulation, there exists a likelihood of physical and/or chemical interactions between them. Any such interactions may result in a negative impact on the physical, stability or performance attributes of the drug product. The choice of excipients is of crucial importance to avoid these negative effects, and to facilitate the development of a robust and an effective formulation. Thus, for a rational selection of excipients, screening of excipient-API compatibility is recognized as an important aspect of formulation[3].

Selexipag is used in adults to treat pulmonary arterial hypertension (PAH, high blood pressure in the vessels that carry blood to the lungs) to slow down the worsening of symptoms and reduce the chance of being hospitalized for PAH.

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Gastro Retentive Drug Delivery System

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A REVIEW: GASTRO RETENTIVE DRUG DELIVERY SYSTEM

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ABSTRACT

The goal of this review on gastroretentive drug delivery systems (GRDDS) was to compile the current literature with a focus on a few gastroretentive approaches that have recently emerged as important methodologies in the field of site-specific orally administered sustained/controlled release drug delivery. To overcome physiological challenges such as short gastric residence times (GRT) and unpredictable gastric emptying times, technological efforts have been made in the study and development of rate-controlled oral drug delivery systems (GET). GRDDS is a method for extending the GRT and targeting site-specific drug release in the upper gastrointestinal tract (GIT) for a local or systemic effect. Because of the fast gastric transition from the stomach, conventional oral dose forms have low bioavailability issues, especially for medications that are less soluble at an alkaline pH of the intestine. Additionally, medications that have a local action in the stomach are quickly emptied and do not spend enough time in the stomach. To lower the frequency of dose administration, several efforts have been made to extend the retention duration of drug delivery systems. GRDFs not only extend dosing intervals, but they also improve patient compliance beyond what is currently possible with controlled release dosage forms. The benefits, drawbacks, and characterisation of gastroretentive drug delivery devices are discussed in this article. This study contains patents and commercially marketed gastroretentive products.

KEYWORDS: Gastroretentive drug delivery system; approach; floating system; Evaluation.

INTRODUCTION

The oral delivery of drugs is the most favoured route of administration because of ease of administration. The bioavailability of drugs in oral dose forms is affected by a variety of

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A Review on Method Development, Validation, Optimization and Applications of HPLC

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A Review on Method Development, Validation, Optimization and Applications of HPLC

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Abstract: ***High-Performance Liquid Chromatography (HPLC) is a technique used to separate components from the mixture. The technology consists of two phases, the stationary phase, and the mobile phase. Component separation is based on differences in partition coefficients in two phases.***
The present review article focuses on the principle, types, instrumentation, process validation, application, advantages, disadvantages of HPLC. HPLC methods development and validation play important roles in the discovery, development, manufacture of pharmaceutical drugs, and various other studies related to humans and animals. An analytical procedure is developed to test a defining characteristic of the drug substance or drug product against established acceptance criteria for that characteristic. Validation of HPLC method as per ICH Guidelines covers all the performance characteristics of validation, like Accuracy, precision, specificity, linearity, range, the limit of detection, the limit of quantification, robustness, and system suitability testing.
Keywords: HPLC, Types, Method validation, Method development, Instrumentation, and Applications.

I. INTRODUCTION

High-Performance Liquid Chromatography (HPLC) involves separations in which the components to be separated are distributed between two immiscible phases.
One of these phases is the mobile phase, and the other is a stationary phase[1,2]. High-Performance Liquid Chromatography is now one of the most powerful tools in analytical chemistry. It can separate, identify, and quantify the compounds that are present in any sample that can be dissolved in a liquid. High-performance liquid chromatography (HPLC) is the most accurate analytical method widely used for the quantitative as well as qualitative analysis of drug products[3]. HPLC is an advanced technique of column liquid chromatography. The solvent usually flows through the column with the help of gravity but in the HPLC technique, the solvent will be forced under high pressure up to 400 atmospheres so that sample can be separated into different constituents with the help of difference in relative affinities[4-9]. n HPLC, pumps will be used to pass pressurized liquid solvent including the sample mixture which is allowed to enter into a column filled with a solid adsorbent material. The interaction of each sample component will be varied and this causes the difference in flow rates of each component and finally leads to the separation of components of the column.
Chromatography can be depicted as a mass exchange process including adsorption. HPLC depends on pumps to pass a pressurized fluid and an example blend through a section loaded with adsorbent, prompting the partition of the specimen segments. The dynamic segment of the section, the adsorbent, is regularly a granular material made of solid particles (e.g. silica, polymers, etc.) 2 µm to 50 µm in size.
The segments of the example mixture/blend are isolated from each other because of their distinctive degrees of connection with the retentive particles. The pressurized fluid is commonly a blend of solvents (e.g. water, acetonitrile/methanol) and is known as the 'mobile phase'. Its organization and temperature play an important part in the partition procedure by affecting the connections occurring between sample segments and adsorbent[10-17].
HPLC is recognized from traditional ("low weight") liquid chromatography because operational pressures are fundamentally higher (50 bar to 350 bar), while normal liquid chromatography regularly depends on the power of gravity to pass the portable stage through the segment. Because of the small sample amount isolated in scientific HPLC, column section measurements are 2.1 mm to 4.6 mm distance across, and 30 mm to 250 mm length. Additionally, HPLC segments are made with smaller sorbent particles (2 µm to 50 µm in normal molecule size). This gives HPLC high determining or resolving power (the capacity to recognize components) while isolating mixtures, which makes it a prominent chromatographic method.

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A Review: Drug- Excipient Interactions Study

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A REVIEW: DRUG- EXCIPIENT INTERACTIONS STUDY

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ABSTRACT

Excipients are included in dosage forms to aid manufacture, administration or absorption. Although considered pharmacologically inert, excipients can initiate, propagate or participate in chemical or physical interactions with drug compounds, which may compromise the effectiveness of a medication. Exicipients are not exquisitely pure. Even for the most commonly used excipients, it is necessary to understand the context of their manufacture in order to identify potential active pharmaceutical ingredients interactions with trace components. Chemical interactions can lead to degradation of the active ingredient, thereby reducing the amount available for therapeutic effect. Physical interactions can affect rate of dissolution, uniformity of dose or ease of administration.

KEYWORDS: Excipient, Drug, Interaction, Physical, Chemical.

INTRODUCTION

Pharmaceutical dosage form is a combination of active pharmaceutical ingredients (API) and excipients. Excipients are included in dosage forms to aid manufacture, administration or absorption (Crowley and Martini). The ideal excipients must be able to fulfill the important functions i.e. dose, stability and release of API from the formulation. Although considered pharmacologically inert, excipients can initiate, propagate or participate in chemical or physical interactions with drug compounds, which may compromise the effectiveness of a medication. Exicipients are not exquisitely pure. In common with virtually all materials of minerals, synthetic, semi-synthetic or natural origin manufacture involves using starting materials, reagents and solvents. Residues invariably remain after isolation. Often, it is the multi-component nature of the excipient that drives many of the interactions with APIs. Even

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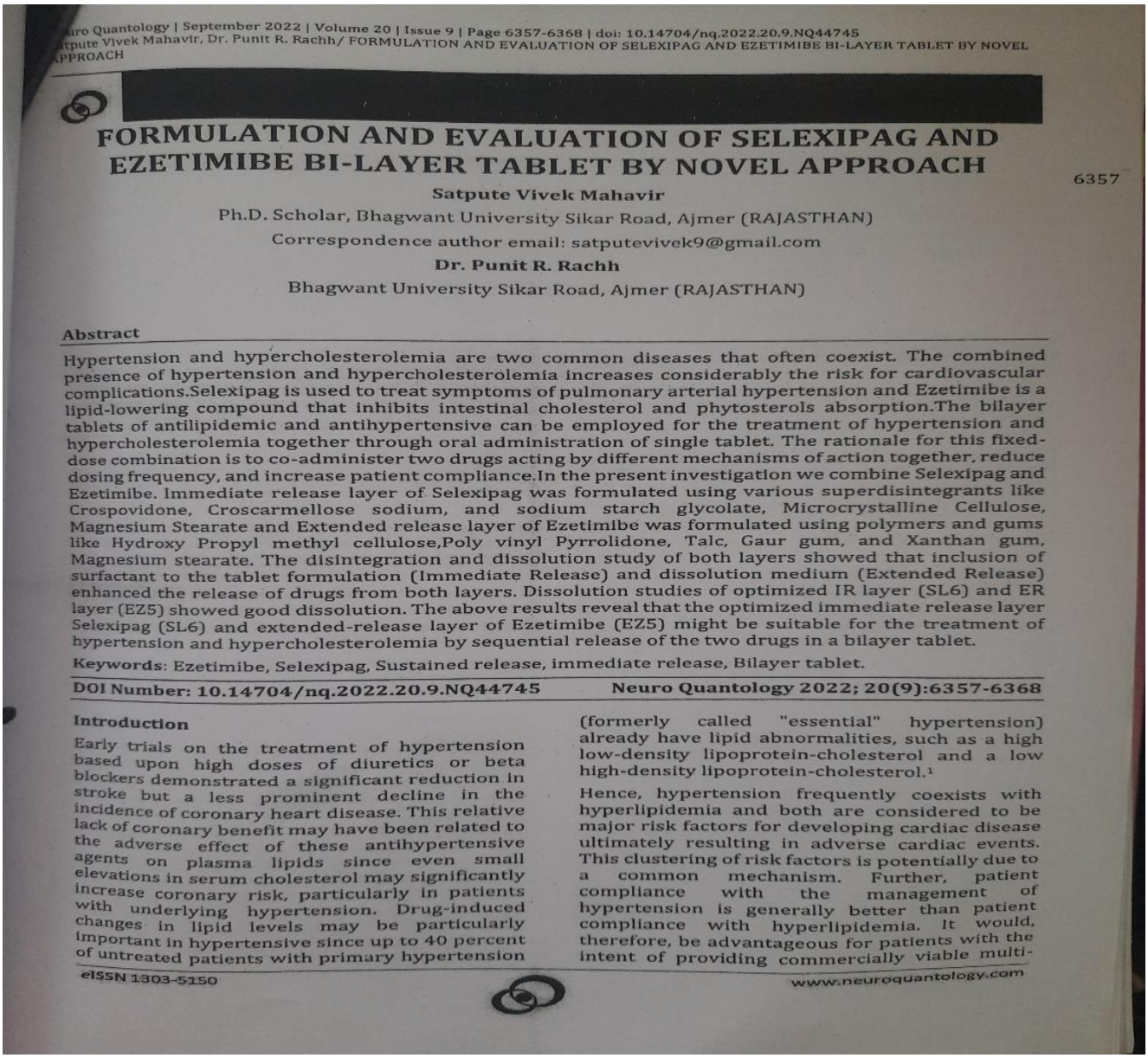
Formulation And Evaluation Of Selexipag And Ezetimibe Bi-Layer Tablet By Novel Approach



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tpute Vivek Mahavir, Dr. Punit R. Rachh/ FORMULATION AND EVALUATION OF SELEXIPAG AND EZETIMIBE BI-LAYER TABLET BY NOVEL
PPROACH

FORMULATION AND EVALUATION OF SELEXIPAG AND EZETIMIBE BI-LAYER TABLET BY NOVEL APPROACH

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Abstract

Hypertension and hypercholesterolemia are two common diseases that often coexist. The combined presence of hypertension and hypercholesterolemia increases considerably the risk for cardiovascular complications.Selexipag is used to treat symptoms of pulmonary arterial hypertension and Ezetimibe is a lipid-lowering compound that inhibits intestinal cholesterol and phytosterols absorption.The bilayer tablets of antilipidemic and antihypertensive can be employed for the treatment of hypertension and hypercholesterolemia together through oral administration of single tablet. The rationale for this fixed-dose combination is to co-administer two drugs acting by different mechanisms of action together, reduce dosing frequency, and increase patient compliance.In the present investigation we combine Selexipag and Ezetimibe. Immediate release layer of Selexipag was formulated using various superdisintegrants like Crospovidone, Croscarmellose sodium, and sodium starch glycolate, Microcrystalline Cellulose, Magnesium Stearate and Extended release layer of Ezetimibe was formulated using polymers and gums like Hydroxy Propyl methyl cellulose,Poly vinyl Pyrrolidone, Talc, Gaur gum, and Xanthan gum, Magnesium stearate. The disintegration and dissolution study of both layers showed that inclusion of surfactant to the tablet formulation (Immediate Release) and dissolution medium (Extended Release) enhanced the release of drugs from both layers. Dissolution studies of optimized IR layer (SL6) and ER layer (EZ5) showed good dissolution. The above results reveal that the optimized immediate release layer Selexipag (SL6) and extended-release layer of Ezetimibe (EZ5) might be suitable for the treatment of hypertension and hypercholesterolemia by sequential release of the two drugs in a bilayer tablet.

Keywords: Ezetimibe, Selexipag, Sustained release, immediate release, Bilayer tablet.

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Introduction

Early trials on the treatment of hypertension based upon high doses of diuretics or beta blockers demonstrated a significant reduction in stroke but a less prominent decline in the incidence of coronary heart disease. This relative lack of coronary benefit may have been related to the adverse effect of these antihypertensive agents on plasma lipids since even small elevations in serum cholesterol may significantly increase coronary risk, particularly in patients with underlying hypertension. Drug-induced changes in lipid levels may be particularly important in hypertensive since up to 40 percent of untreated patients with primary hypertension (formerly called "essential" hypertension) already have lipid abnormalities, such as a high low-density lipoprotein-cholesterol and a low high-density lipoprotein-cholesterol.[1]

Hence, hypertension frequently coexists with hyperlipidemia and both are considered to be major risk factors for developing cardiac disease ultimately resulting in adverse cardiac events. This clustering of risk factors is potentially due to a common mechanism. Further, patient compliance with the management of hypertension is generally better than patient compliance with hyperlipidemia. It would, therefore, be advantageous for patients with the intent of providing commercially viable multi-

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Green Chemistry

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GREEN CHEMISTRY

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1.Abstract

The object of Green Chemistry is the reduction of chemical pollutants flowing to the environment. The Chemistry and the Environmental Division of EuChem has assumed Green Chemistry as one of its areas of interests, but one question to solve is where Green Chemistry should be placed within the context of Chemistry and Environment. The concept of Green Chemistry, as primarily conceived by Paul Anastas and John Warner, is commonly presented through the twelve principles of Green Chemistry. However, these Twelve principles through fruits of a great intuition and common sense, do not a clear connection between aims, concepts, and related research areas of Green Chemistry. The Twelve unsolved questions are the object of the present article.

2. Introduction

New chemistry is required to improve the economics of chemical manufacturing and to enhance the environmental protection. The green chemistry concept presents an attractive
technology to chemists, researchers, and industrialists for innovative chemistry research and applications .Primarily, green chemistry is characterized as reduction of the environmental damage accompanied by the production of materials and respective minimization and proper disposal of wastes generated during different chemical processes.
According to another definition, green chemistry is a new technique devoted to the synthesis, processing, and application of chemical materials in such manner as to minimize hazards to humankind and the environment.
Numerous new terms have been introduced associated with the concept of “green chemistry,” such as eco-efficiency, sustainable chemistry, atom efficient or atom economy, process intensification and integration inherent safety, product life cycle analysis, ionic liquids, alternate feed stocks, and “Renewable Energy Source.”
Hence, there is an essential need to improve the synthetic and engineering chemistry either by environmental friendly starting materials or by properly designing novel synthesis routes
that reduce the use and generation of toxic substances by using modern energy sources.

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A Review On: Preservatives Used in Pharmaceuticals and Impacts on Health

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A Review On: Preservatives Used in Pharmaceuticals and Impacts on Health

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Abstract- ***For several decades pharmacist have been aware of the need to protect their products against microbial contamination but it is only during the last one or perhaps two decades the serious thought of has been applied to the science of preservation. Preservatives are commonly used as additives in pharmaceutical products, food and cosmetics. Some of the liquid preparations are susceptible to microbial contamination because of the nature of ingredients present in it. Such preparation is protected by preservatives which avoids degradation and alteration of the product. A preservative is a natural or synthetic chemical added to various products which helps to prevent microbial decomposition. Present article deals with the study of ideal properties, classification, mechanism of action, pharmaceutical applications and its impact on health of various preservatives used in pharmaceuticals.***

I. INTRODUCTION

A preservative is a natural or synthetic chemical that is added to products such as foods, pharmaceuticals, paints, biological samples, wood, etc. to prevent decomposition by microbial growth or by undesirable chemical changes. Preservatives are substances that are commonly added to various foods and pharmaceutical products in order to prolong their shelf life. The addition of preservatives to such products, especially to those that have higher water content, is essential for avoiding alteration and degradation by microorganisms during storage. Preservatives are put in foods to inhibit growth of bacteria, yeasts, or molds that can cause disease. Chemical preservation cannot totally keep products from spoiling, but they slow the spoiling process caused by microorganisms. Frozen and canned foods often do not contain any preservatives. Processed Foods are foods that are put through a process to kill harmful bacteria that may form in the food. These processes are supposed to be helpful to the products, but they can also add harmful substances.

When a natural food is processed it may be crushed, heated and have chemicals added to it that may kill all the nutritional value of the food. Then often additives are added to the product to put back some vitamins and nutrients that were lost when the food product was processed. Preservative is added to keep foods fresh and to keep them from spoiling.[1] The first preservatives to be used were vinegar, salt and sugar. Now many of the preservatives are man-made chemicals. Many of the synthetic food and cosmetic additives are considered to be safe, but some of them were found to be carcinogenic and toxic and it is better to limit their use. In general, all synthetic chemical additives and preservatives may be avoided, as many of them have not been properly tested. It happens fairly often that a synthetic chemical additive that has been judged to be safe and has been used for year is later found to be toxic and, in some cases, causes children and adult to die.

All of the chemical food coloring can be potentially harmful, so it is better to avoid all food coloring made from synthetic chemicals. It is important to understand

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An Overview on Artificial Blood

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Review Article

An Overview on Artificial Blood

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ABSTRACT

The 21st century is a challenge for people. Population growth, aging population, generation of new infectious agents, and natural disasters are some of the factors that threaten the status quo of blood transfusions. Artificial blood is designed solely to carry oxygen and carbon dioxide into the body. Depending on the type of blood replacer, it can be produced with a variety of techniques using chemical separation, synthetic production, or recombinant biochemical techniques. The technologies focused on the two major alternatives to blood are perfluorocarbons and hemoglobin-based oxygen carriers (HBOCs). With the availability of blood products, the United States alone is expected to generate more than $ 7.6 billion annually.

HISTORY

The concept of artificial blood sounds simple, but it's not. In 1616, William Harvey first described blood circulation, and scientists began to wonder if blood could be taken and replaced with other liquids such as wine and milk. 6 Milk was one of the first ingredients in 1854, and patients used milk to treat cholera in Asia. The patient died of bleeding due to a serious injury and needed a blood exchange. [1] Since World War II, research on blood proposals has been taken seriously in order to overcome large-scale situations such as private sector events. The composition of blood and the function of each substitution are clear except for the mobility of oxygen. [3] They wanted to change a person's blood for a variety of beneficial effects, including healing of illness and personality. In 1667, the first successful human blood transfusion took place.

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Face Care Cosmetic-A Review On Herbal Face Toner

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FACE CARE COSMETIC-A REVIEW ON HERBAL FACE TONER

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ABSTRACT

Natural remedies have lesser side effects, secure and also aceeptable than chemical ones. In the world market, formulations with natural ingredients have more accesible. For delivering the drug imediately to the site of action, which gives prolonged action is the benefits of topical drug delivery system. Skin is the main path of delivery of drug in TDDS. The ingredients are easily available which are being used. They are not only easily available but also has nutritional value from topical point of view and more economical. To formulate and evaluate the formulation is the motive of this project. It is natural and safe herbal preparation which gives calming, soothing and astringent effect on the face. The natural ingredients like aloe vera, cucumber also the pippermint, lemmongrass and rose water used in the formulation. It having ability to reduce the facial irritation as well as to enhance beauty. We can use it in our daily busy schedule. Face toner is estimated for its physicochemical properties, surface tension, pH and stability. Most popular advantages of herbal cosmetics are, they are non toxic in nature and they having tendancy to reduce allergic reactions. The main reason behind this study, we found good properties of the face toner.

KEYWORDS: Toner, Aloe vera, Cucumber, Pipper mint, Lemmon grass.

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Chloroquine and Hydroxychloroquine in Coronavirus Disease-19: The Real Savior or a False-positive Treatment

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Chloroquine and Hydroxychloroquine in Coronavirus Disease-19: The Real Savior or a False-positive Testament

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Abstract :-

Objective: A novel coronavirus disease (COVID-19) has spread all around the world. The progression from initial signs to a diagnosis of acute respiratory failure is usually related to spontaneous cytokine production. There is a growing need to classify appropriate medicines for treatment care. The inhibitory effect of chloroquine (CQ) is potential. However, CQ can lead to serious side effects. Various studies recommend hydroxychloroquine (HCO) have similar antiviral effect as of CQ and maybe a better therapeutic solution. Therefore, we aim to explore the mechanism by which HCQ can inhibit replication of coronavirus. Materials and Methods: A retrospective study was carried out using online databases from 2003 to 2020, Results: The obtained results showed that HCQ can inhibit viral replication and entry inside the cell through raising lysosomal pH and hinding to specific receptors on cells, thereby, preventing viral entry. Conclusion: HCQ has a better safety profile than CQ and also modulates cytokine syndrome. However, further studies are needed to explore this mechanism.

Key words: Chloroquine, coronavirus disease-19, hydroxychloroquine, severe acute respiratory syndrome .

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A Review: Etiology, Pathogenesis And Treatment Of Peptic Ulcer

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A REVIEW: ETIOLOGY, PATHOGENESIS AND TREATMENT OF PEPTIC ULCER

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ABSTRACT

Peptic ulcer disease, which includes both stomach and duodenal ulcers, accounts for a significant portion of people seeking surgical advice around the world. A peptic ulcer is a lesion that develops on the stomach or duodenal lining. "Gastric ulcers" and "duodenal ulcers" are the two most prevalent peptic ulcer kinds. Peptic ulcers are caused by an imbalance between aggressive factors like hydrochloric acid (HCL), pepsin, refluxed bile, leukotrienes (LTs), reactive oxygen species (ROS), and defensive factors like the mucus-bicarbonate barrier, prostaglandins (PGs), mucosal blood flow, cell renewal and migration, nonenzymatic and enzymatic antioxidants. The most common causes of peptic ulcer disease are H. pylori infection and the use of nonsteroidal anti-inflammatory medications (NSAIDs). In addition, a variety of variables are implicated in the pathogenesis of gastric ulcer, including bacterial infection (Helicobacter pylori), certain drugs (NSAID), chemicals (Hcl/ethanol), and stomach cancer, with minor factors including stress, smoking, spicy food, and nutritional deficiencies.

KEYWORDS: Peptic Ulcer, Acid Secretion, NSAID, Helicobactor Pylori, Proton Pump Inhibitor.

INTRODUCTION

Peptic ulcer occurs in that part of the gastrointestinal tract (G.I.T.) which is exposed to gastric acid and pepsin, i.e. the stomach and duodenum. The etiology of peptic ulcer is not clearly known. It results probably due to an imbalance between the aggressive (acid, pepsin, bile and H. pylori) and the defensive (gastric mucus and bicarbonate secretion, prostaglandins, nitric oxide, high mucosal blood flow, innate resistance of the mucosal cells) factors. A variety of psychosomatic, humoral and vascular derangements have been implicated and the causative

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Formulation and Evaluation of Sustained Release Ibuprofen Tablet

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RESEARCH ARTICLE OPEN ACCESS

Formulation and Evaluation of Sustained Release Ibuprofen Tablet

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Abstract:

In this study of Ibuprofen it is an (NSAIDs) non steroidal anti- inflammatory drug and used as analgesic & anti-inflammatory drug. It can be also used in the treatment of rheumatoid arthritis, osteoarthritis, and primary dysmenorrheal. Ibuprofen is absorbed rapidly, it has low aqueous solubility so it also lowers the dissolution profile of drug.The main aim of proposed work was to develop Ibuprofen tablets, sustained release dosage form, for the treatment inflammation and pain in the body. Ibuprofen is used to reduce fever and treat pain or inflammation caused by many conditions such as headache, toothache, back pain, arthritis, menstrual cramps, or minor injury. Sustained release formulation is the drug delivery system that designed to achieve a prolonged therapeutic effect by continuously releasing medication over an extended period of time after administration of single dose. The tablets were prepared by direct compression method using Hydroxy Propylemethyl Cellulose HPMC(HV),HPMC(LV) and talc.Tablets blends were evaluated for bulk density, tapped density,Carr's Index compressibility index and angle of repose shows satisfactory results.The results of all these tests were found to be satisfactory. The in vitro dissolution study was carried out for 12 hours using paddle method in phosphate buffer (pH7.4) as dissolution media. Formulation F4 shows – of drug release at the end of 12 hours.

Keywords: Ibuprofen, Sustained Release, Dissolution Rate

Keywords — Clinical studies, target discovery and validation, lead optimization, new medication.

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INTRODUCTION

1. **Oral Drug Delivery System**

Oral route of drug delivery is the most preferred route of administration All other routes of drug delivery because of ease of administration,patient compliance and flexible design of dosage form. An oral drug delivery system providing a uniform drug delivery can only partly satisfy therapeutic and biopharmaceutical needs, as it doesn't take in to account the site specific absorption rates within the gastrointestinal tract (GIT). Therefore there is a need of developing drug delivery system that release the drug at the right time, at the specific site and with the desired rate.[1,2]

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A Comprehensive Review On Clinical Trials

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A COMPREHENSIVE REVIEW ON CLINICAL TRIALS

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ABSTRACT

A clinical trial is a type of research that looks at specific health issues with human volunteers. The quickest and safest way to find a treatment that works for people and a way to improve health is through carefully conducted clinical trials. Under controlled conditions, investigational trials determine whether experimental treatments or new ways to use known therapies are safe and effective. Health issues are addressed in large populations or natural populations through observational trials. A crucial and highly specialized type of biological assay, clinical trials aim to measure therapeutic efficacy. Clinical pharmacologists conduct research on human volunteers for phase I pharmacokinetics, safety, and gross effects. If the drug passes the test, it moves on to phase II testing, where clinical pharmacologists study the pharmacokinetics, safety, and therapeutic efficacy of selected patients. If the drug passes, clinical investigators now study hundreds of selected patients in phase III, primarily for safety and therapeutic efficacy. The drug is now approved and can be sold if this is passed. Physicians from a variety of hospitals and clinics still provide feedback on the drug's efficacy, ADR, and marketing after phase IV.

KEYWORDS:- Clinical trials, Phases of clinical trials, ICH guidelines, IND, NDA.

INTRODUCTION

A clinical trial is a systematic process that is intended to find out the safety and efficacy of a drug/device in treating/preventing/diagnosing a disease or a medical condition.[1] For any new drug to enter in clinical trial, it must pass preclinical studies. Preclinical studies involve in vitro (i.e. test-tube or Laboratory) studies and trials on animal populations. Wide range of

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Solid Lipid Nanoparticle (Sln)

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Review Article

SOLID LIPID NANOPARTICLES: A PROMISING DRUG DELIVERY SYSTEM

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ABSTRACT
Solid lipid nanoparticles are at the forefront of the rapidly developing field of nanotechnology with several potential applications in drug delivery, research and clinical medicine, as well as in other varied sciences. Solid lipid nanoparticles (SLNs) technology represents a promising new approach to lipophilic drug delivery. Nanoparticles are solid colloidal particles ranging in size from 1 to 1000 nm and composed of macromolecular material. The biodegradable and bioacceptable nature of SLNs makes them less toxic as compared to polymeric nanoparticles. SLNs can also be used to improve the bioavalability of drugs. In this present review this new approach is discussed in terms of their advantages, characterization, pharmacokinetic studies, in-vivo studies, in-vitro studies, and special features.

KEYWORDS: Nanotechnology, Solid lipid nanoparticle, Colloidal carriers, Bioavailability enhancement.

INTRODUCTION

A high potential for drug delivery has been attributed to particulate drug carriers, especially small particles such as microparticles and colloidal system in nanometer range.[1] Nano particulate drug delivery system may offer plenty of advantages over conventional dosage forms which include improved, reduced toxicity, enhancedbio distribution and improved patient compliance[2]. Colloidal particles ranging in size between 10 and 1000 nm are known as nanoparticles. They are manufactured from synthetic/natural polymers and ideally suited to optimize drug delivery and reduce toxicity. Over the years, they have emerged as a variable substitute to liposomes as drug carriers. The successful implementation of nanoparticles for drug delivery depends on their ability to penetrate through several anatomical barriers, sustained release of their contents and their stability in the nanometer size. However, the scarcity of safe polymers with regulatory approval and their high cost have limited the wide spread application of nanoparticles to clinical medicine [3].To overcome these limitations of polymeric nanoparticles, lipids have been put forward as an alternative carrier, particularly for lipophilic pharmaceuticals. These lipid nanoparticles are known as solid lipid nanoparticles (SLNs), which are attracting wide attention of formulators world-wide.[4] SLNs are colloidal carriers developed in the last decade as an alternative
system to the existing traditional carriers (emulsions, liposomes and polymeric nanoparticles). They are a new generation of submicron-sized lipid emulsions where the liquid lipid (oil) has been substituted by a solid lipid. SLN offer unique properties such as small size, large surface area, high drug loading and the interaction of phases at the interfaces, and are attractive for their potential to improve performance of pharmaceuticals, neutraceuticals and other materials.[5].

Nanotechnology

Nanotechnology is the science of matter and material that deal with the particle size in nanometers. These are small colloidal particles that are made of nonbiodegradable & biodegradable polymers and their diameter is around 200nm[6]

Nanoparticles

Nanoparticles are solid polymeric, submicronic colloidal system range between 5-300nm consisting of macromolecular substances that vary in size 10nm to 100nm. The drug of interest is dissolved, entrapped, adsorbed, attached or encapsulated into the nanoparticle matrix[7] In recent years, significant effort has been devoted to develop nanotechnology for drug delivery, since it offers a suitable means of delivering small molecular weight drugs, as well as macromolecules such as proteins, peptides or genes to cells and tissue. Nanoparticles hold promise for peroral drug delivery, which represents so far the most common and convenient route of administration.

The advantages of using nano particles for nanoparticles loaded with drugs, because of their small size can penetrate through small capillaries and are taken up by cells and allow the drug release at right rate and dose at specific sites in the body for a certain time to release the accurate delivery, which enhances the therapeutic effect and reduces the toxicity and side effects. The use of biodegradable materials for nanoparticles preparation allows sustained release within the target site over a period of days or even weeks. The advantages of nanoparticles as drug delivery system are that they are biodegradable, non-toxic, and capable of being stored for longer periods. In addition, their potential uptake as well as their stability in the GIT that indicates that nanoparticles are expected to be the promising carriers for the transport of drugs. These attributes make nanoparticles more suitable for the purpose of sustained release and improvement of bioavailability[8]

SOLID LIQUID NANOPARTICLES

Solid lipid nanoparticles (SLNs) are considered to be the most effective lipid based colloidal carriers (fig 1), introduced in early nineties. This is the one of the most popular approaches to improve the oral bioavailability of the poorly water soluble drugs. SLNs are in the range of submicron size (50-1000 nm) and are composed of physiologically tolerated lipid components which are in solid state at room temperature[9,10] They have many advantages such as good biocompatibility, low toxicity andlipophillic drugs are better delivered by solid lipid nanoparticles and the

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Novel Maos of Novel Cinnoline Derivatives

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NOVEL MAOS OF NOVEL CINNOLINE DERIVATIVES

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Abstract

An efficient and green novel microwave assisted organic synthesis (MAOS) method has been developed for dinitro cinnoline derivatives with better yields. The framework of these derivatives was constructed from dinitrophenyl arylethylidene hydrazines. Tetrabutylammonium bromide (TBAB) was used as a phase transfer catalyst (PTC), potassium carbonate as an inexpensive and efficient catalyst and water as solvent due to its polarity which helps to increase the temperature substantially. This methodology features a simple, environmentally friendly approach, employing water as a green solvent and using a one-pot reaction. The use of microwave increases the rate of reaction and it was observed that dinitro arylcinnolines can be synthesised in 8-12 min of microwave irradiation compared to conventional thermal heating protocol which requires more than 2 h. Spectral data confirms the identity of synthesized derivatives and satisfactory yields are obtained by this process.

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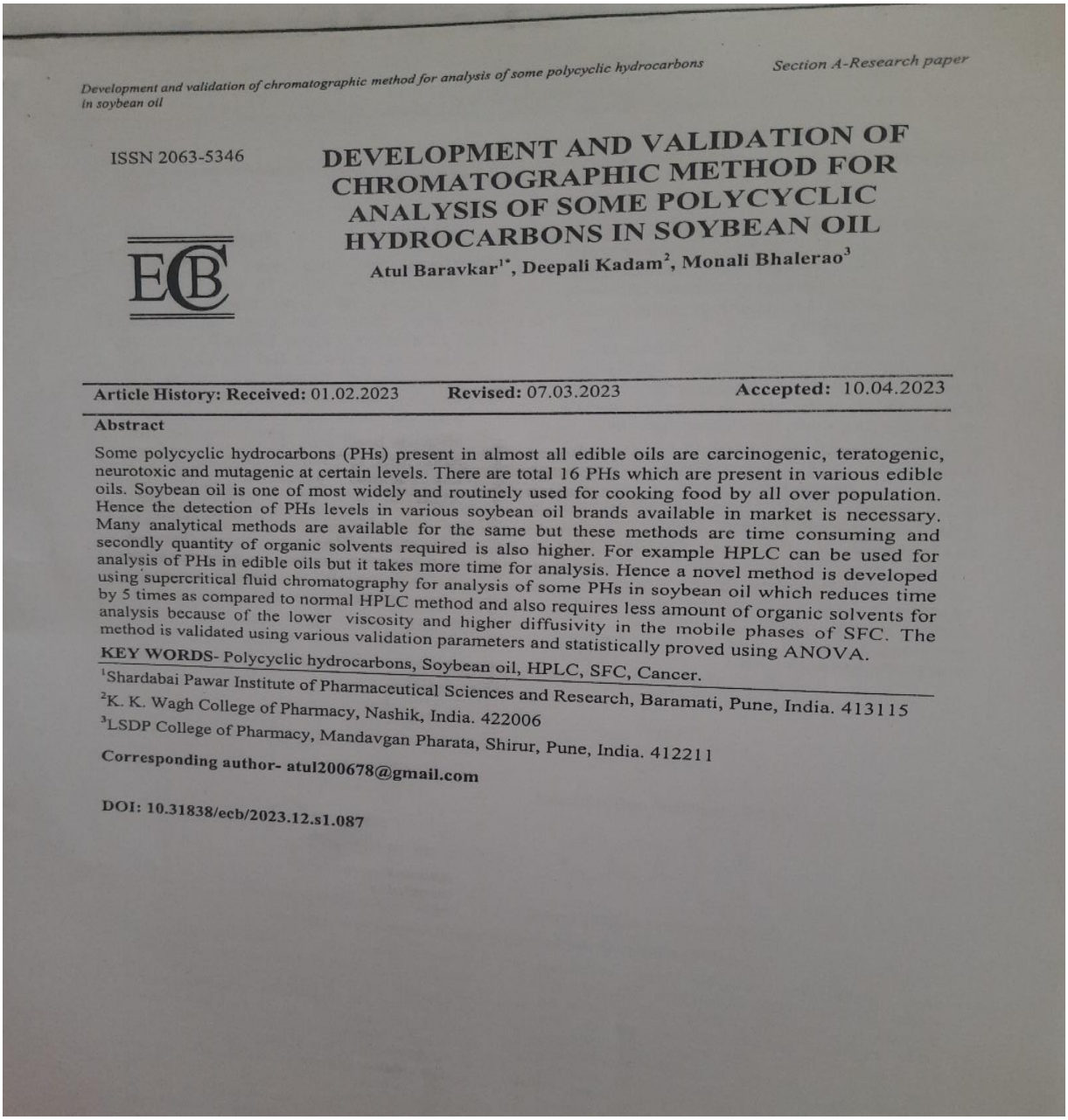
Development and validation of chromatographic method for analysis of some polycyclic hydrocarbons on soybean oil



ISSN 2063-5346

DEVELOPMENT AND VALIDATION OF CHROMATOGRAPHIC METHOD FOR ANALYSIS OF SOME POLYCYCLIC HYDROCARBONS IN SOYBEAN OIL

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Abstract

Some polycyclic hydrocarbons (PHs) present in almost all edible oils are carcinogenic, teratogenic, neurotoxic and mutagenic at certain levels. There are total 16 PHs which are present in various edible oils. Soybean oil is one of most widely and routinely used for cooking food by all over population. Hence the detection of PHs levels in various soybean oil brands available in market is necessary. Many analytical methods are available for the same but these methods are time consuming and secondly quantity of organic solvents required is also higher. For example HPLC can be used for analysis of PHs in edible oils but it takes more time for analysis. Hence a novel method is developed using supercritical fluid chromatography for analysis of some PHs in soybean oil which reduces time by 5 times as compared to normal HPLC method and also requires less amount of organic solvents for analysis because of the lower viscosity and higher diffusivity in the mobile phases of SFC. The method is validated using various validation parameters and statistically proved using ANOVA.

KEY WORDS- Polycyclic hydrocarbons, Soybean oil, HPLC, SFC, Cancer.

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A Review on Beta Vulgaris (Beet Root)

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A Review on Beta Vulgaris (Beet Root)

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Microsponge Drug Delivery System - A Review

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Microsponge Drug Delivery System - A Review

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Development And Validation Of RP HPLC Method For Simultaneous Estimation Of Zaltoprofen And Paracetamol In Bulk And Tablet Formulation

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INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF ZALTOPROFEN AND PARACETAMOL IN BULK AND TABLET FORMULATION

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ICH Guideline.

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ABSTRACT

A simple, sensitive, linear, precise and accurate RP-HPLC method for simultaneous estimation of Zaltoprofen and Paracetamol in bulk and tablet formulation as developed and validated. Chromatographic conditions used are stationary phase Grace C^{18} column (250mm × 4.6mm, 5µ particle size. The mobile phase Methanol: Phosphate buffer (PH 3.0) in the ratio 75:25 v/v and flow rate was maintained 0.8ml/min, detection wavelength was 241nm. The retention times were 3.101min and 5.838min for Zaltoprofen and Paracetamol respectively. Calibration plot were linear R^2=0.9994 over the concentration range 10-18µg/ml for Zaltoprofen, R^2 = 0.9994 for the Paracetamol 40-72µg/ml. No interference from any component of pharmaceutical dosage form was observed. The proposed method has been validated as per ICH guidelines, validation studies revealed that method id specific, rapid, reliable and reproducible. The developed method successfully employed for routine quality control analysis in the combined pharmaceutical dosage form.

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INTRODUCTION

Zaltoprofen 2-(10, 11-dihydro-10-oxdibenzo (b, f) thiepin-2-yl propionic acid is a potent NSAID. Zaltoprofen is a preferential COX-2 inhibitor and selectively inhibits prostaglandin E_2 (PGE_2) production at inflammatory sites. Paracetamol is 4-hydroxy phenyl acetamide. The central analgesic action of paracetamol is like aspirin, i.e. it raise pain threshold, but has weak peripheral anti-inflammatory action. It is poor inhibitor of PG synthesis in peripheral tissues, but more active on COX inhibitor in the brain.

The ability of paracetamol to inhibit COX-3 could also account for its analgesic, antipyretic action. The combined paracetamol treatment may increase the effect and decrease the dose dependent side effect of NSAIDs and combination of Zaltoprofen with Paracetamol will be potent analgesic and anti-inflammatory drug for future in the pain management. ZAL is marketed in the combination with PCM under the trade name ZOTT ® P by Aeon Formulations Pvt. Ltd. Literature reveals that there are many methods for the individual determination of ZAL and PCM; but few methods are cited for determination of combined dosage form so, it was proposed to develop an economical, rapid and simple RP-HPLC method for simultaneous estimation of these drugs in combined dosage form.

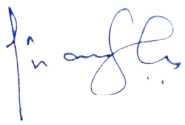
MATERIAL OF METHODS

Chemicals: HPLC grade Methanol, HPLC grade Water, Potassium dihydrogen phosphate AR grade. All other chemicals were of analytical grade.

Instrumentation:HPLC3000 series instrument, P-3000-M Reciprocating pump 40M pal. RP-HPLC Binary gradient system with grace C_{18}column (250mm × 4.6 mm id, particle size 5µ) equipped with UV 3000 –M series detector use, Wenser high precision balance (PGB 100).

Chromatographic Conditions: The mobile phase ratio was optimized in isocratic mode for analysis of Zaltoprofen and Paracetamol. Different ratio was studied such as, 70:30, 80:20, 75:25. Of Methanol: Phosphate Buffer for Zaltoprofen and Paracetamol. The final mobile consisted 75:25 and mobile phase was clarified by filtration through nylon filter paper with pore size 0.45µm and degassed through sonicator then pumped at flow rate 08ml/min, in gradient mode on grace C_{18} column. The peak response was monitored at 241nm wave length. The sample solution was injected (20µl) HPLC system and data was acquired LC solution workstation software.

Preparation of Standard Solution: Weigh accurately 10mg of Zaltoprofen and Paracetamol was transferred into 10ml volumetric flask it was dissolved with methanol from this



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Synthesis of Cyclopyrrolidine Clubbed with Oxadiazole Bases and Evaluation of their Anti-Diabetic Activity through in vivo Model

Ind. J. Pharm. Edu. Res., 2023; 57(3s):s749-s757.
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Original Article

Synthesis of Cyclopyrrolidine Clubbed with Oxadiazole Bases and Evaluation of their Anti-Diabetic Activity through *in vivo* Model

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ABSTRACT

Background and Aim: Based on inhibitors of DPP-IV, there is a fantastic method for creating anti-diabetic medications. These inhibitors regulate diabetic patients' blood sugar levels to prevent difficulties with their health. In the current work, we created a brand-new series of compounds Cyclopyrrolidine clubbed with oxadiazole bases. **Materials and Methods:** Cyclopyrrolidine clubbed with oxadiazole bases (B-1 to B-16) were synthesized and characterized through IR, NMR, mass spectrometry, and elemental analysis. Docking studies were performed to assess interactions and binding modes of synthesized hits at the binding site of receptor DPP-4 (PDB 3W2T). Using vildagliptin as a standard drug, six of the synthesized compounds were tested for their antidiabetic activity in diabetic rats induced with HFD-STZ-Nicotinamide. **Results:** The results showed that compound B-XIV (220*4.56B) resulted in the greatest reduction in blood glucose level from all synthesized compounds compared to that of vildagliptin (215*7.52B) in HFD-STZ-Nicotinamide. Other compounds showed moderate to good antihyperglycemic activity. **Conclusion:** From he presents work it can be concluded that synthesized compounds possess good DPP-IV inhibitory activity. Compounds containing electron-withdrawing groups (chlorine, nitro, methoxy) were displayed a good anti-diabetic effect than electron-donating groups (methyl, hydroxyl). Oxadiazole derivatives could be used for further development to obtain more promising drug candidates.

Keywords: Furadiazole, Hyperglycaemic, HFD-STZ-Nicotinamide.

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INTRODUCTION

Since the early 1970s, 1,2,4-oxadiazole heterocycles have been extensively investigated, yielding a variety of bioactive compounds, including anti-cancers,[1] anti-inflammatory,[2] anticonvulsant,[3] antiviral,[4] antibacterial,[5] antifungal,[6] anti-depressant,[7] anti-angiogenic,[8] analgesic,[9] anti-insomnia, anti-oedema,[10] anti-parasitic,[11] anti-Alzheimer[12] and anti-diabetic.[13] In addition, they showed inhibition of dipeptidyl peptidase IV,[14] α-Glucosidase,[15] α-Amylase,[16] Protein tyrosine phosphatase 1B.[17] A number of 1,2,4-oxadiazoles were screened as GLP19 (Glucagon-Like Peptide 1),[18] PPAR (peroxisome proliferator-activated receptor) alpha/gamma agonists,[19] GPR40 (G-Protein Receptor 40)[20] agonists as a antidiabetic activity.

Recently, GLP-1 has been identified as a potential target for treatment of T2DM. Gut hormone GLP-1 increases insulin secretion after eating. GLP-1 has been shown to improve glycemic control in patients with Type 2 diabetes.[21] As GLP-1 cleaves its N-terminal, DPP-IV controls its activity [7-36]-amide to form GLP-1[9-36]-amide, an inert compound. This method can be used to increase GLP-1 in the blood by inhibiting DPP-IV.[22] As a result, the investigation of DPP-IV inhibitors as possible treatments has been devoted a significant amount of time and effort as shown in Figure 1.

MATERIALS AND METHODS

ChemSketch software was used to simulate the 2D structures of the compounds, and AutoDock version 1.5.6 was used to dock the hits. A protein (PDB NO: 3W2T) was used as DPP-IV. Chemicals of analytical grade came from Nice Chemicals Pvt. Ltd., (India), Fizmerck (India), M Lychem chemical (India), and Poona chemical (India). We used the chemicals and solvents in their original forms, without purification.

Using Thin-Layer Chromatography (TLC), a reaction was monitored to determine if the reactants had been consumed and if a new product had been formed. Using the Labronics LT-115 digital melting point apparatus, we measured the melting

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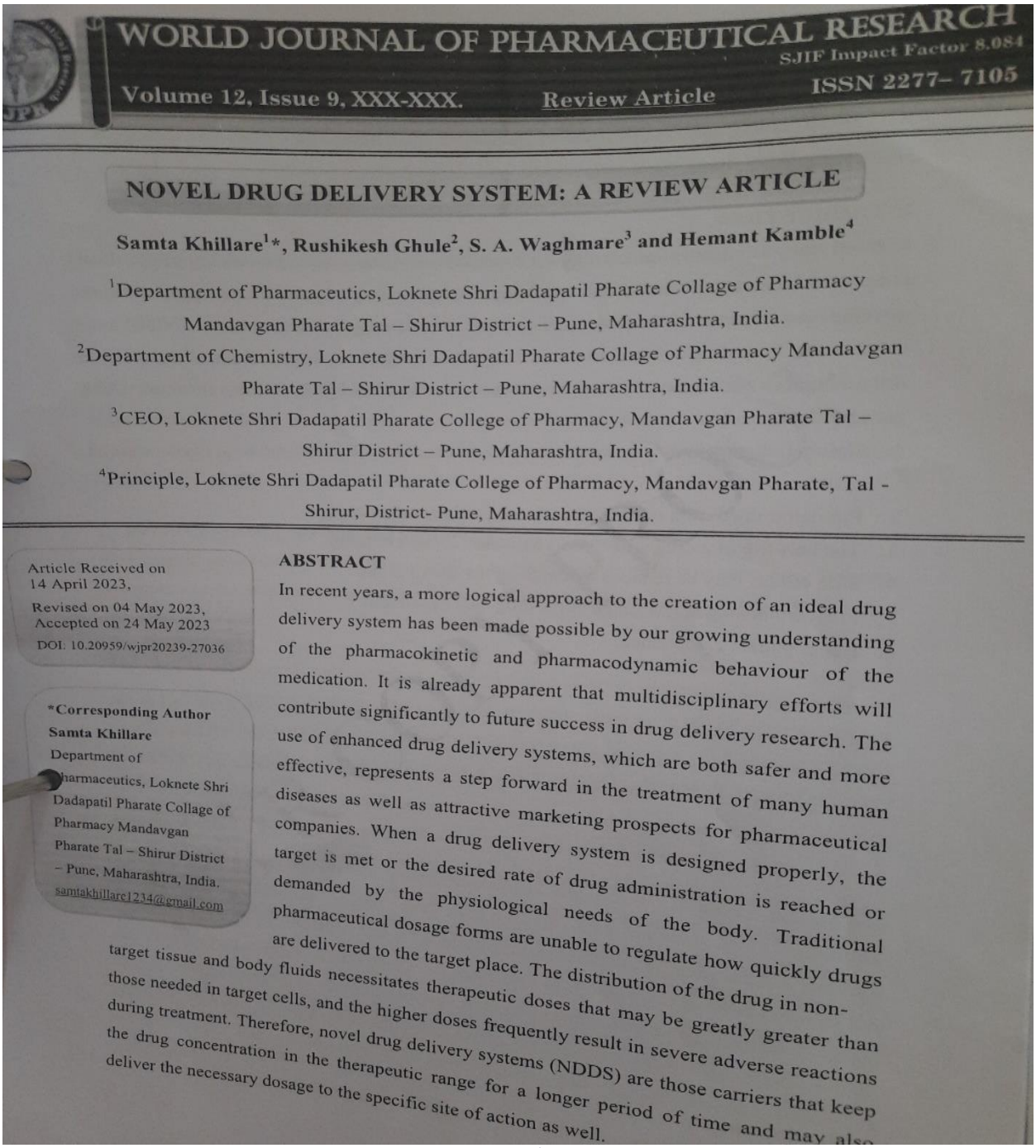
Novel Drug Delivery System: Review Article



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NOVEL DRUG DELIVERY SYSTEM: A REVIEW ARTICLE

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ABSTRACT

In recent years, a more logical approach to the creation of an ideal drug delivery system has been made possible by our growing understanding of the pharmacokinetic and pharmacodynamic behaviour of the medication. It is already apparent that multidisciplinary efforts will contribute significantly to future success in drug delivery research. The use of enhanced drug delivery systems, which are both safer and more effective, represents a step forward in the treatment of many human diseases as well as attractive marketing prospects for pharmaceutical companies. When a drug delivery system is designed properly, the target is met or the desired rate of drug administration is reached or demanded by the physiological needs of the body. Traditional pharmaceutical dosage forms are unable to regulate how quickly drugs are delivered to the target place. The distribution of the drug in non-target tissue and body fluids necessitates therapeutic doses that may be greatly greater than those needed in target cells, and the higher doses frequently result in severe adverse reactions during treatment. Therefore, novel drug delivery systems (NDDS) are those carriers that keep the drug concentration in the therapeutic range for a longer period of time and may also deliver the necessary dosage to the specific site of action as well.

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A Review on Nanotechnology in Cancer Treatment

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A Review on Nanotechnology in Cancer Treatment

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tract- Cancer is a disease in which some of the body's s grow uncontrollably and spread to other parts of the ly. Cancer treatment is one of the major challenges of dern medicine. Cancer targeting treatment has been atly improved by new tools an approaches based on notechnology. Nanotechnology can be applied to target ugs to the surface or to the interior of specific cells. it can so be used in diagnosis and prognosis of diseases. In ldition , Nano shells and nanoparticles are the most romising applications for various cancer treatments.

eywords- cancer, nanotechnology, nanoparticles , cancer reatment

I. INTRODUCTION

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. There are many types of cancer treatment. The types of treatment that you receive will depend on the type of cancer. Cancer therapy currently limited to surgery, radiation and chemotherapyall three methods risk damage to normal cells tissue selectively to cancerous cells and neoplasms and enhance the therapeutic efficacy of radiation based and other current treatment modalities.

Nanotechnology is science, engineering, and technology conducted at the nanoscale, which is about 1 to 100 manometers. Nano refers to the 10-9 power, or one billionth. For comparison, a human hair is about 100,000 nanometres thick. There are many interesting Nano devices being developed that have a potential to improve cancer detection, diagnosis, and treatment of cancer nanoparticles is defined as a partical of matter is between 1-100 nm

Nanoparticles can be defined as particles less than 100 nm in diameter that exhibit new or enhanced size - dependent properties compared with larger particles of the same material

Metal nanoparticles (silver and gold) are widely used in

1) cell imaging
2) DNA hybridization
3) proteins interaction and
4) photo thermal therapy

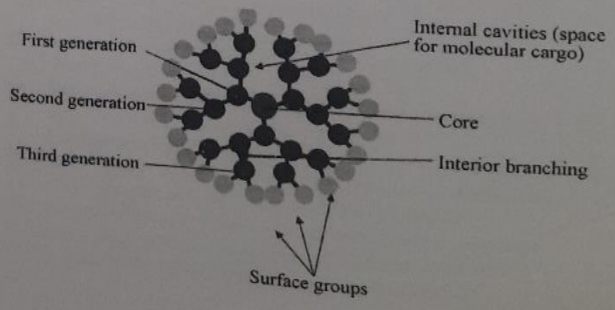
Advantages of nanoparticles :

1) Improved bioavailability by enhancing aqueous solubility
2) increasing resistance time in the body (increasing half life for clearance)
3) Stable dosage form of drugs
4) Faster dissolution
5) Decreasc toxicity
6) Smaller dosage form

Nanotechnology in drug delivery system and cancer treatment

1. Dentrimers :

Dentrimersare highly branched, star-shaped macromolecules with manometer-scale dimensions. Dentrimers are defined by three components: a central core and an exterior surface with functional surface group The varied combination of these components yields products of different shapes and sizes with shielded interior cores .dentrimers have been explored for the encapsulation of hydrophobic compounds and for the delivery of anticancer drugs. There are three methods for using dendrimers in drug delivery. First, the drug is covalently attached to the periphery of the dendrimer to form dendrimer prodrugs. Second the drug is coordinated to the outer functional groups via ionic interactions .Third the dendrimer acts as a unimolecular micelle by encapsulating a pharmaceutical through the formation of a dendrimer-drug supramolecular assembly.



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