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3.3.2. Number of books and chapters in edited volumes/books published and Papers published national/ international conference proceedings per Teacher during last five years

Metric	Parameter
3.3.2	Number of books and chapters in edited volumes/books published and papers published in national/international conference proceedings per teacher during last five year

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3.3.2	**Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years**

Sl.No	Description
1	Proceedings : 2022-2023
2	Proceedings : 2021-2022
3	Proceedings : 2020-2021
4	Proceedings : 2019-2020
5	Proceedings : 2018-2019

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Proceedings: 2022-2023

Sl. No.	Name of the teacher	Title of the book/chapters published	ISBN number of the proceeding	Name of the publisher	National / International
1	Dr. Akash Marathakam	An abridged Text Book of Pharmaceutical chemistry	9789393885128	EMMESS Medical Publishers bangalore	National
2	Mr. sijo pattam	pharmaceutical microbiology	9789357621397	Alpha International Publication	International
3	DR. S. VENKATESH	Exploring the plant based extracts for treatment of diabetics caused by steroids	9788119102174	BP Publishers	International

Sl. No.	Name of the teacher	Title of the paper	Title of the proceedings of the conference	Name of the conference	National/ International
1	DR. S. VENKATESH	In-Vitro Assessment of Antioxidant and Evaluation of Antiurolithiatic activity of Plant Pentas Lanceolata (Forssk.) Deflers in Ethylene glycol induced Urolithiasis in Rat	Poster No: SCOPIC4EP-205	International Conference on The Preclinical Research Paradigm for Revamped Infectiuos Diseases-Senghundhar College of Pharmacy, Thirunchengode, Tamilnadu	International

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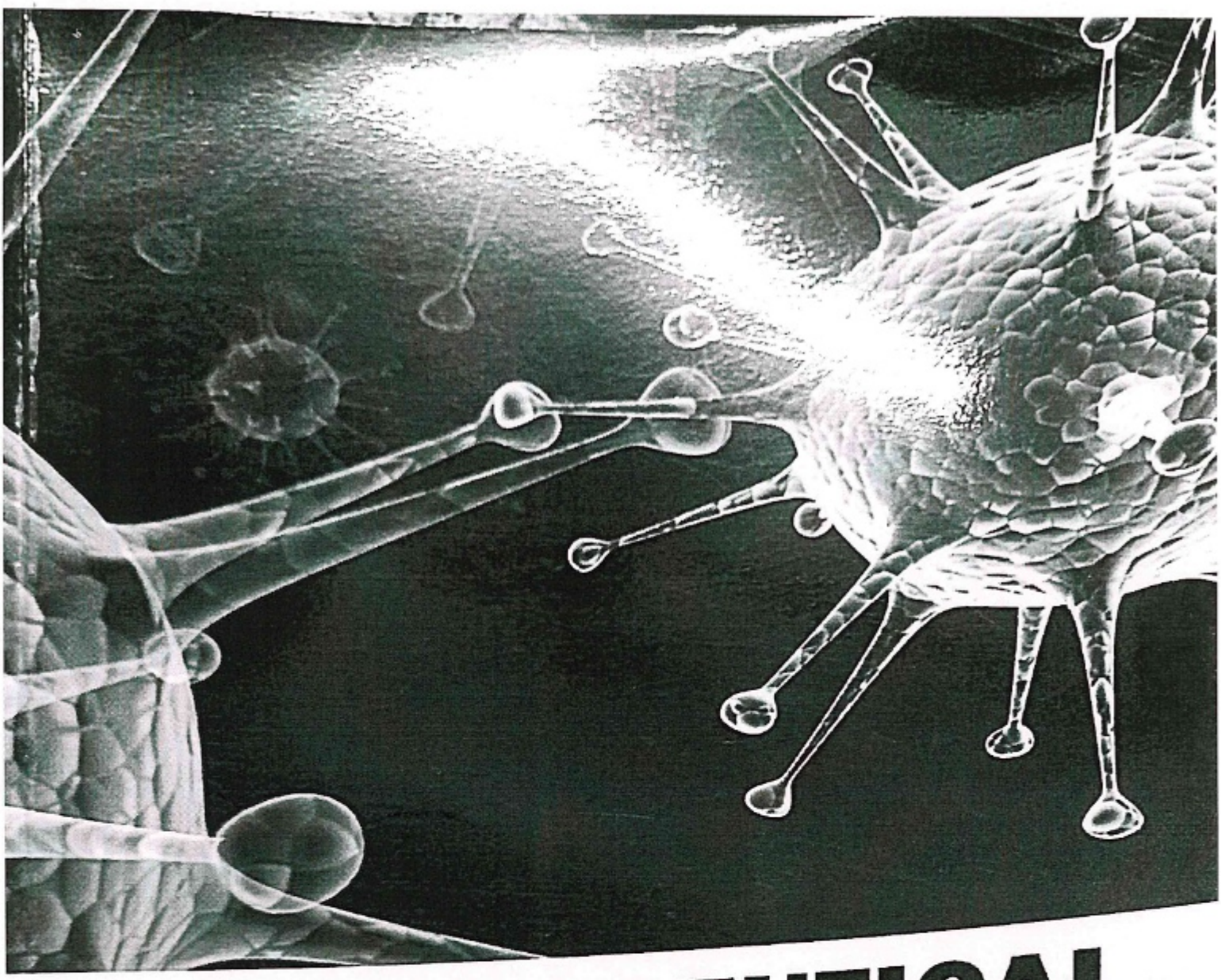

PHARMACEUTICAL MICROBIOLOGY

Prof. Sijo Pattam
Dr. Atlya Akhtar Khan
Dr. Shaheena Sohl
Mr. Ankur Agrawal

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ISBN: 978-93-5762-139-7
MRP: Rs. 600/-
PUBLISHER & PRINTER: Alpha International Publication (AIP),
3/725/2, Kammangudi, Adichapuram,
Thiruvarur District, Tamilnadu- 614717, INDIA
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PUBLISHER & PRINTER: Alpha International Publicati[on]

3/725/2, Kammangudi, Adichapuram,

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Chapter 9
Print ISBN: 978-81-19102-18-1, eBook ISBN: 978-81-19102-17-4

Exploring the Plant Based Extracts for Treatment of Diabetic Caused by Steroids

C. Velmurugan [a++*], Sujith Thomas [b++] and S. Venkatesh [c++]

DOI: 10.9734/bpi/cops/v8/3740B

ABSTRACT

The present study was evaluate the hypoglycemic and hypolipidemic effect of ethyl acetate (EAEPC) and ethanolic (EEPC) extracts from fruits of *Pyrus communis* by dexamethasone-induced diabetic rats. Chronic hyperglycemia during diabetes causes glycation of body proteins that in turn leads to secondary complications affecting eyes, kidneys, nerves and arteries. The different groups of animals were induced for diabetes with dexamethasone (10 mg/kg bw- sc) once daily for 11 days except normal control. The extracts 200mg/kg and glibenclamide 5mg/kg was administered to treat the diabetic rats once daily for 11 days. When compared to the diabetic control, the treated groups demonstrated significant ($p<0.01$) anti-diabetic and hypolipidemic activity. The extracts have the same beneficial effects on blood glucose levels as the standard. Additionally, it maintains body weight while lowering elevated levels of triglycerides (TGL), low density lipoproteins (LDL), very low density lipoproteins (VLDL), and total cholesterol (TC). It also increases low levels of high density lipoprotein (HDL). We came to the conclusion that both extracts had the potential to be effective oral hypoglycemic medications and showed promise for the creation of phytomedicines for diabetes mellitus and its complications.

Keywords: Anti-diabetic; hypolipidemic; pyrus communis; dexamethasone and glibenclamide.

1. INTRODUCTION

According to the WHO, the number of people with diabetes worldwide is currently over 150 million, and by the year 2025, that number is likely to rise to 300 million

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Research Area: His area of research includes Preclinical Evaluation, Diabetes, CNS Studies, Toxicological Studies.

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Research and Academic Experience: He has 14.8 years of Research and Academic Experience.

Research Area: His area of research includes Diabetes, Toxicology, Chemotherapy.

Number of Published papers: He has published 15 research articles in several reputed journals.

Any other remarkable point(s): He is an examiner of Various Examination in KUHS.

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Research and Academic Experience: He has 14 years of Research and Academic Experience.

Research Area: His area of research includes Preclinical Evaluation and Toxicological Studies.

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DISCLAIMER
This chapter is an extended version of the article published by the same author(s) in the following journal.
Asian J Pharm Clin Res, 6(5): 108-111, 2013.

Peer-Review History: During review of this manuscript, double blind peer-review policy has been followed. Author(s) of this manuscript received review comments from a minimum of two peer-reviewers. Author(s) submitted revised manuscript as per the comments of the peer-reviewers. As per the comments of the peer-reviewers and depending on the quality of the revised manuscript, the Book editor approved the revised manuscript for final publication.

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entitled IN-VITRO ASSESSMENT OF ANTIOXIDANT AND EVALUATION OF ANTIUROLITHIATIC ACTIVITY OF PLANT PENTAS LANCEOLATA (FORSSK.) DEELERS IN ETHYLENE GLYCOL INDUCED UROLITHIASIS IN RAT

in CEP - International Conference on **"THE PRECLINICAL RESEARCH PARADIGM FOR REVAMPED INFECTIOUS DISEASES"** held on **27.07.2023 & 28.07.2023,** Organized by the **Department of Pharmacology, SENGHUNDHAR COLLEGE OF PHARMACY, Tiruchengode, Namakkal Dt.,** is accredited by The Tamil Nadu Dr. M.G.R. Medical University, under Category III, with 10 Credit Points.

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Proceedings: 2021-2022

Sl. No.	Name of the teacher	Title of the book/chapters published	ISBN number of the proceeding	Name of the publisher	National / International
1	Dr. Akash Marathakam	Recent Updates on Methods, Applications, and Practical Uses of Scanning Electron Microscopy in Various Life Sciences	978-3-030-99541-6	Springer	International
2	Dr. S. Kathirvel	Recent Updates on Methods, Applications, and Practical Uses of Scanning Electron Microscopy in Various Life Sciences	978-3-030-99541-6	Springer	International
3	Dr. Akash Marathakam	A Textbook of medicinal chemistry - I	978-93-96596-17-6	Prime Publishers	National

Sl. No.	Name of the teacher	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International
4	DR. S. VENKATESH	Caenorhabditis elegans as A Model organism for the Evaluation of Anti-Hyperlipidemic activity of Ethanolic Extract of Impatiens balsamina seeds.	Poster No: PP-DDS-03	Monash Initiate 2022-Monash International Health Science & Technology Conference	International
5	AKHIL HARI	Formulation and characterization of solid lipid nanoparticle loaded mucoadhesive thermos reversible nasal in-situ gel of Ropinirole hydrochloride for Parkinson's disease	POSTER-PT/ST1/0087	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
6	RAJITHA K	INSILICO DESIGN ,SYTHESIS AND BIOLOGICAL EVALUATION OF 2,3	POSTER-PT/ST2/0074	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF	National

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7	Dr. Akash Marathakam	IN-SILICO DESIGN, SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF NOVEL PYRAZINE 2-CARBOXAMIDE DERIVATIVES	poster-PT/ST2/0100	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
8	SAREENA A	SURVEILLANCE OF ADVERSE DRUG REACTIONS IN A TERTIARY CARE HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY	ORAL-OR/ST5/002	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
9	JEREENA E	COMPARISON OF EFFICACY AND COST EFFECTIVENESS OF ORAL IVERMECTIN AND PERMETHRIN IN SCABIES PATIENTS	poster-PT/ST5/018	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
10	ATHIRA A	Formulation and characterization of solid lipid nanoparticle loaded mucoadhesive thermoreversible nasal in-situ gel of Ropinirole hydrochloride for Parkinson's disease	Poster-PT/ST1/0087	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
11	ANARGHA	In Silico and In Vitro Study on Anticancer Property of Acalypha Indica Linn in Oral Squamous Cell Carcinoma	Poster-PT/ST4/0053	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
12	RAJEEV P THOMAS	POST COVID RESPIRATORY SEQUELAE AND THEIR MANAGEMENT IN A TERTIARY CARE TEACHING HOSPITAL	Poster-PT/ST5/025	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National

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13	NIHAL P	FORMULATION AND IN-VITRO EVALUATION OF SERTACONAZOLE ENTRAPPED MICROSPONGE BASED DRUG DELIVERY SYSTEM	POSTER-PT/ST1/00180	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL National TEACHERS OF INDIA	National
14	SMITHA P	COMPARATIVE STUDY: RISK FACTORS OF ACUTE CORONARY SYNDROME AMONG YOUNG AND OLDER PATIENTS	POSTER-PT/ST5/034	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National
15	DR. S. VENKATESH	IN-VITRO ANTI-SNAKE VENOM ACTIVITY OF THE LEAVES OF AMPELOCISSUS ARANEOSA	Poster No: APP#001	8th Indo-Caribbean International Conference on "Global Challenges and Current Scenario in Pharmaceutical Sciences-Vels Institute of Science Technology and Advanced Studies, Chennai, Tamilnadu	Internatio nal
16	ZUHRA MARIYAM	A PROSPECTIVE STUDY ON PRESCRIPTION PATTERN OF ANTI-ACIDITY MEDICATIONS IN PATIENTS WITH CARDIAC DISEASES IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA.	Poster-PT/ST5/00121	25-ANNUAL NATIONAL CONVENTION OF ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA	National

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Recent Updates on Methods, Applications, and Practical Uses of Scanning Electron Microscopy in Various Life Sciences

8

S. Kathirvel, Selvasankar Murugesan, and Akash Marathakam

Abstract

The current abstract explores the basic concepts, fundamental principles, and advantages of SEM (Scanning Electron Microscope) over other microscopic techniques. SEM is commonly used in physical, materials, and chemical sciences. It is now widely accepted and applied in medical studies, biological science, and pharmaceutical sciences. This wide range of SEM utility in biological areas has opened up more avenues and opportunities to understand and visualise the unknown facts and concepts in biomedicine. Furthermore, advances in SEM in various life sciences have aided in the improved imaging and study of a variety of biological specimens. The progress of SEM in various life sciences is thoroughly discussed in this chapter. Apart from its life science applications, the value of SEM in nanotechnology, microchip production, and digital artwork is briefly touched upon.

Keywords

Scanning electron microscope · Electron spectroscopy · Biological · Life science

8.1 Introduction

Electron microscopes use an energetic electron beam to examine objects on a fine scale. The concept of electron microscope was developed due to the limitations of light microscopes by the physics of light. This theoretical limit had been achieved

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S.-K. Kamaraj et al. (eds.), *Microscopic Techniques for the Non-Expert*,
https://doi.org/10.1007/978-3-030-99542-3_8

7.5

CHAPTER

3

Cholinergic and AnticholinergicDrugs

Content:

1. ***Cholinergic neurotransmitters :***
   Biosynthesis and catabolism of acetylcholine.
   Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.
2. ***Parasympathomimetic agents :***
   SAR of Parasympathomimetic agents,
   i) ***Direct acting agents:****Acetylcholine, Carbachol*. Bethanechol,Methacholine, Pilocarpine.*
   ii) ***Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible):*** *Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride,Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophateiodide, Parathione, Malathion.*
   iii) ***Cholinesterase reactivator:*** *Pralidoxime chloride.*
3. ***Cholinergic blocking agents:*** *SAR of cholinolytic agents*
   i) ***Solanaceous alkaloids and analogues:***
   Atropine sulphate, Hyoscyaminesulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide.*
   ii) ***Synthetic cholinergic blocking agents:***
   Tropicamide, Cyclopentolatehydrochloride, Clidinium bromide, Dicyclomine hydrochloride,Glycopyrrolate, Methantheline bromide, Propantheline bromide,Benztropine mesylate, Orphenadrine citrate, Biperidine hydrochloride,Procyclidine hydrochloride*, Tridihexethyl chloride, Isopropamide iodide,Ethopropazine hydrochloride.*

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PT/ST1/0086

FORMULATION AND EVALUATION OF ANTIAGING CREAM CONTAINING RESVERATROL

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Abstract: Resveratrol, an antioxidant polyphenol, has been the subject of intense interest in recent years due to a range of unique anti-aging properties. Resveratrol has the antioxidant properties, thus can protect cells against oxidative damage associated with the effects of free radicals and UV radiation on the skin and it slows down the process of photoaging of the skin. it also helps improve the look of fine lines, hyperpigmentation, texture and overall radiance. The aim of the present study was to formulate and evaluate an antiaging cream containing Resveratrol. Antiaging cream containing Resveratrol was prepared using stearic acid, olive oil, polyethylene glycol, glycerine, triethanolamine, tween 80, sodium benzoate, rose water and water and formulated cream was evaluated for pH , spread ability and stability. The prepared cream exhibited good spread ability, good consistency, homogeneity with good appearance, pH, and no evidence of phase separation and easy of removal. Resveratrol Antiaging cream having antioxidant property could be used as a safe, stable, homogeneous and effective topical formulation to protect and avoid aging of skin.

Keywords: *Resveratrol, antioxidant , antiaging*

PT/ST1/0087

Formulation and characterization of solid lipid nanoparticle loaded mucoadhesive thermoreversible nasal in-situ gel of Ropinirole hydrochloride for Parkinson's disease

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Abstract: Parkinson's disease is a CNS degenerative ailment results due to the death of dopamine-generating cells in the substantia nigra. Administering Ropinirole hydrochloride (ROP) nasally as a selective nonergoline dopamine D2 receptor agonist, which promotes the production of dopamine by striatal dopamine receptors. The main objective of the study was to develop and evaluate SLN loaded *in situ* nasal gel of ROP for assuring site specific targeting and enhancing bioavailabilty. By using a double emulsion technique, SLNs of ROP were formulated and then cold-incorporated into an *in situ* gel matrix made up of poloxamer 407 and HPMC K4M. Formulations exhibited gelation at nasal temperature, and it was discovered that the gelation period was less than the mucociliary clearance time. Due to mucoadhesion and increased gel strength, it was observed that the nasal residence time had risen. The ex vivo drug release for the optimised nasal gel formulation showed sustained release pattern of 81.26 ± 1.5 upto 12 hours. It can be inferred that the ROP SLN loaded intra nasal *in situ* gel can successfully cross mucous membrane, reach systemic circulation and provide sustained drug release for 12 hours. Hence intranasal delivery of ROP by SLN loaded intranasal in situ gel can be a very promising approach for patients suffering from Parkinson's disease.

KEY WORDS- *In situ gel, Parkinson's disease, SLN, Poloxamer 407, HPMC K4M*

PT/ST2/0074

INSILICO DESIGN ,SYTHESIS AND BIOLOGICAL EVALUATION OF 2,3 DIHYDROXY QUINOXALINE

Rajitha k*

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dihydroxyquinoxaline molecule and its derivatives has become an important moiety for the development of novel drugs. A series of 2, 3- dihydroxyquinoxaline derivatives were synthesised, using different methods and the structure was confirmed by IR spectroscopy, NMR spectroscopy and MASS spectrometry. Derivatives were then evaluated for their anticancer, anti-inflammatory and antioxidant activity. 2, 3-dihydroxyquinoxaline was synthesized by the cyclization reaction of orthophenylenediamine and oxalic acid in the presence of ethanol. Further the products were treated with several reagents to form derivatives. The derivatives were evaluated for their in-vitro anticancer, anti-inflammatory and antioxidant activities. In this, OXD1, OXD4, OXD5 showed good anticancer activity, all compounds showed good anti-inflammatory activity, andOXD1, ODX4, OXD5 showed good and OXD2 and OXD3 showed moderate antioxidant activity. The results show that the synthesized 2, 3-dihydroxyquinoxaline derivatives are an interesting lead molecule for further synthetic and biological evaluation. These compounds certainly hold great promise towards the pursuit to discover novel class of anticancer, anti-inflammatory and antioxidant agents.

Key words: 2, 3-dihydroxyquinoxaline; spectroscopy; anticancer; anti-inflammatory; antioxidant; orthophenylenediamine

PT/ST2/0076

DISCOVERY OF POTENTIAL INHIBITORS AGAINST EGFR-TK'S & CDK'S RECEPTOR OF ANTI-CANCER LEAD MOLECULES FROM QUINAZOLINONE: *IN-SILICO* DESIGN – COMPUTATIONAL APPROACH.

Revathi.P*, Ananthi.R, Gokul Sri.S, Nisha.E
Kavitha K*[1], Mohan S[1a], Kandaswamy.C.S[1b]
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Cancer is one of the demoralizing also the majority widespread grave diseases in place of most important wellbeing calamity within equally residential as well as budding countries for the instance more than a few decades. According to Journalism, Says to facilitate quinazolinone based molecules were originate to hinder the epidermal growth factor receptor (EGFR) and tyrosine kinases. EGFR-TK'S acting imperative part in cell expansion, regulation with one of the most significant deliberation studied targets of tyrosine kinases (TK) inhibitors[34]. CDK2 could have a key role in the G2 phase of the cell cycle. The significance of cycline-dependent kinase2 (CDK2) for cell cycle progression treatment in opposite to cancer also additional hyper-proliferative disorders[35]In order to categorize the potential aspirant for managing Cancer, molecular docking done as well executed newly designed molecules from the derivatives of quinazolin-4-one on the binding pocket of enzyme EGFR TK's and CDK's (PDB ID:1M17,2KW6)enzyme and reference compounds were used 5-fluoro Uracil and gefitinib towards explore the binding score as well as computational approaches on selected quinazolinone derivatives of designed (QDC1-QDC10) libraries to show the relationship of the structural parameters drug like properties which results in the prediction of pharmacokinetic & bioactivity properties, to make available and design of new target Analogue as Anticancer agents for further study.

Keywords: *EGFR-TK'S, CDK2, Anticancer, lead molecules, Active site, Binding score, Inhibitors.*

PT/ST2/0100

IN-SILICO DESIGN, SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF NOVEL PYRAZINE-2-CARBOXAMIDE DERIVATIVES

*Meera Rajendran, Akshay Kumar U, Rajitha K, Shadiya C K, Dr Akash Marathakam, Vajid P K

Department of Pharmaceutical Chemistry, National College of pharmacy, Manassery, Mukkam, Kerala, 673602, India

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Pyrazine-2-carboxamide (PZA) derivatives are heterocyclic compounds with pyrazine moiety within the ring nucleus. Because of the emergence of multi drug resistance, there is inevitable need for the development of new therapeutic moieties. The present proposal consists of In-silico design, synthesis and biological evaluation of a number of novel Pyrazine-2- carboxamide derivatives with promise for relevant biological activity and using different methods, the structure was confirmed by IR, NMR and MASS spectroscopy. Pyrazine-2-carboxamide derivatives have evaluated for their antibacterial, antiparasitic, antifungal, antitubercular and cytotoxic activities. The synthesis of core intermediate pyrazine-2-carboxylic acid hydrazide starts with the alkaline hydrolysis of starting material (PZA) forming pyrazinoic acid, which on esterification followed by hydrazinolysis give core intermediate in a good yield. The derivatives of PZA/hydrazones were further synthesized in one step by the condensation of core intermediate with the appropriate aromatic/substituted aldehydes Synthesized molecules show moderate anti-inflammatory, antioxidant and cytotoxic activities. PZADA shows better antioxidant and cytotoxic activities whereas PZADC shows better anti-inflammatory activity and promising antitubercular activity. The present study showed that the synthesized compounds possess broad spectrum of biological activity such as in-vitro anticancer, antitubercular, anti-inflammatory and antioxidant activity.

Key words: *Pyrazine-2-carboxamide (PZA); Mycobacterium tuberculosis; In-silico drug design; Lipinski rule.*

PT/ST2/0101

Bio-analytical Method Development And Validation For The Simultaneous Estimation of Aceclofenac And Thiocolchicoside In Human Plasma by LC-MS/MS

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A simple, selective, rapid and precise LC-MS/MS method has been developed and validated for concurrent estimation of Aceclofenac and Thiocolchicoside in human plasma it was enriched with the help of Protein Precipitation technique. Hibar® C18 (5µm, 50 x 4.6 mm i.d.) column is used as stationary and the following eluent is used to separate the aceclofenac and thiocolchicoside Cyanomethane and 10mM Ammonium acetate buffer (pH 4.0) with the ratio 80:20 v/v and the flow rate was fixed 0.5ml/min and the detection was performed by Triple quadrupole mass spectrometry LC-MS/MS using electron spray ionization as positive and negative mode. The calibration curve was consistently accurate for the Aceclofenac and Thiocolchicoside over the range of 785 to 15700ng/ml and 6 to 120ng/ml using Etodolac as internal standard. Limit of Detection (LOD) and Limit of Quantification (LOQ) of Aceclofenac is 1.5ng/ml and 4.5ng/ml and of Thiocolchicoside is 1ng/ml and 3ng/ml respectively. The precision, accuracy and the correlation coefficient (R^2) of Aceclofenac and Diclofenac are within the limits as per USFDA guidelines, so this can be used for the quantification of Aceclofenac and Thiocolchicoside in Human plasma for the study of biomedical and biopharmaceutical sciences.

Key words: *LC-MS/MS, Bio-analytical, Aceclofenac, Thiocolchicoside, Huma*

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OR/ST5/002

SURVEILLANCE OF ADVERSE DRUG REACTIONS IN A TERTIARY CARE HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY

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Abstract: Adverse drug reactions are well-known risks of drug therapy and major causes of mortality and morbidity in both inpatient and outpatient patients. The goal of the study is to examine the clinical spectrum of adverse drug reactions that occur in a hospital, taking into account factors including clinical presentation, causality, severity, and preventability. A prospective observational study was conducted for a period of 6 months in a tertiary care hospital. The study included 317 patients who satisfied the inclusion criteria. Using the necessary validated measures, detected and suspected ADRs were evaluated for causality, severity, predictability, and preventability. Throughout the course of the study, a total of 38 ADRs were observed, recorded, evaluated, and reported. The majority of patients with ADRs were over 60 years old (53.3 %). Diuretics were the medication class most frequently linked to ADR, accounting for 28.9% of events. The majority of the ADR reports were caused by Furosemide (23.7%) and Hypokalaemia was the most frequently reported adverse drug reaction, occurring in 8 (21.1%) cases. An analysis of causality showed that 92.1 percent of ADRs were possibly drug-related. According to an assessment of the severity of the suspected ADRs, 23.7 percent of the suspected ADRs were mild and 76.3 percent were moderate in intensity. When the preventability of ADRs was evaluated, it was shown that 26.3 percent of ADRs were likely preventable. The findings of this study revealed that adverse drug reactions were important contributors to the subsequent health issues that arise after hospitalisation. There is a need for healthcare workers to be more aware of the possibility of adverse drug reactions leading to hospital admissions because the majority of these adverse reactions are predicted. Thus, in order to reduce drug-related morbidity, health care practitioners must be made aware of the significance of ADR reporting through awareness campaigns.

Keywords: *Adverse Drug Reactions, causality, severity, Preventability.*

OR/ST5/003

UTILIZATION PATTERN OF ANTIDEPRESSANTS AMONG PATIENTS VISITING PSYCHIATRIC OUT-PATIENT CLINIC OF A TERTIARY CARE HOSPITAL

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Abstract: Antidepressants are a group of psychotropic medications that are used to treat depression. A very few studies have been carried out in India, which have evaluated the prescription pattern of psychotropic medications, particularly antidepressants. This prospective observational study aimed to assess the utilization pattern of antidepressants among patients visiting the outpatient clinic of the psychiatry department of a tertiary care hospital. Patients who visited the study site and fulfilled the mental and behavioural diagnostic criteria for depression were included in the study. The demographic and clinical details including drugs prescribed were collected and documented in a study-specific data collection form. The ratio of prescribed daily dose to defined daily dose (PDD: DDD) was calculated to assess the adequacy of antidepressant utilization among the study population. A total of 154 patients' data was collected and a

PT/ST5/017

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PERCEPTION OF HEALTH PROFESSIONS STUDENTS TOWARDS PATIENT SAFETY

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Abstract: Patient safety is the prevention of healthcare-associated errors and adverse events from happening to patients. As stewards of patient safety, health professionals are the key partners guaranteeing the protected and normal utilization of medication by maintaining the rights of patients. Safe health care depends on efficiently trained individuals with the best roles and responsibilities acting together. Measuring health care professionals' safety culture through service is a useful tool to understand the areas that need improvement. We conducted this study to assess the knowledge, attitude and perception of health professions students towards patient safety. The questionnaire was developed and validated. This questionnaire was divided into three domains: Knowledge, Attitude and Perception. The questionnaire was distributed in a printed or web-based form and the response was collected which was archived into a Microsoft Excel sheet. The collected response was analyzed using suitable statistical analysis. A total of 1102 participants were enrolled and females [680 (61.7%)] were predominant. Among the participants, A majority were nursing students [416 (37.74%)] followed by pharmacy [370(33.57%)], medical [204(18.51%)] and dental [12 (10.16%)]. The study showed that the dental students had more knowledge (0.5771 +/- 0.134, P=0.002) whereas, the pharmacy students had better attitudes (3.85 +/- 0.487, P=0.003) and perception (3.92 +/- 0.478, P=0.002) towards the patient safety. Knowledge, attitude and perception among the health professions students were satisfactory. We observed that most of the students were aware of preventable medication errors. A majority of the participants [457 (41.4%0] expressed that peer-led education, inter-professional education can upgrade students understanding of patient safety concepts.

Keywords: *Patient Safety, Health Profession Students, Knowledge, Attitude, Perception*

PT/ST5/018

COMPARISON OF EFFICACY AND COST EFFECTIVENESS OF ORAL IVERMECTIN AND PERMETHRIN IN SCABIES PATIENTS.

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Abstract: Scabies is a contagious and intensely itchy skin condition caused by a mite known as sarcoptesvarhominis. This study was conceived to compare the efficacy and cost effectiveness of oral ivermectin and permethrin in scabies. A prospective observational study was conducted in a 500 bedded tertiary care teaching hospital. As per inclusion and exclusion criteria 94 patients enrolled in the study. Then compared the efficacy of oral ivermectin and permethrin in patients using Visual analogscale, Verbal rating scale and Numerical rating scale during baseline and follow-up. Cost effectiveness was determined by Incremental cost effectiveness ratio. For each group, 47 patients treated with oral ivermectin and permethrin. Visual analogue scale response before and after treatment for permethrin and Oral ivermectin was 3.60±1.68 and 6.08±1.23 with p value 0.00 which is statistically significant. Verbal rating scale response before and after treatment for permethrinand oralivermectin was 1.39±0.38 and 1.40±1.03 with p value 0.00 which is statistically significant. Numerical rating scale response before and after treatment was 3.90±1.08 and 6.53±1.21 with p value 00.0 which is statistically significant. For cost effectiveness analysis, mean difference in the effect of permethrin and oral ivermectin was 0.149 and mean difference in cost is 725.9. Incremental cost effectiveness ratio was -48.651. Incremental cost effectiveness ratio's slope at 95th confidence interval obtained at 4th quadrant which shows oral ivermectin was cost effective drug. This study demonstrates that both drugs were efficacious for scabies. But compared to permethrin, oral ivermectin showed greater improvement in pruritus assessed by using Visual analogscale, Verbal rating scale and Numerical rating scale, oral ivermectin was the cost-effective treatment option for scabies.

Keywords: *scabies, oral ivermectin, permethrin, visual analogue scale, verbal rating scale, numerical rating scale.*

PT/ST1/0086

FORMULATION AND EVALUATION OF ANTIAGING CREAM CONTAINING RESVERATROL

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Abstract: Resveratrol, an antioxidant polyphenol, has been the subject of intense interest in recent years due to a range of unique anti-aging properties. Resveratrol has the antioxidant properties, thus can protect cells against oxidative damage associated with the effects of free radicals and UV radiation on the skin and it slows down the process of photoaging of the skin. it also helps improve the look of fine lines, hyperpigmentation, texture and overall radiance. The aim of the present study was to formulate and evaluate an antiaging cream containing Resveratrol. Antiaging cream containing Resveratrol was prepared using stearic acid, olive oil, polyethylene glycol, glycerine, triethanolamine, tween 80, sodium benzoate, rose water and water and formulated cream was evaluated for pH , spread ability and stability. The prepared cream exhibited good spread ability, good consistency, homogeneity with good appearance, pH, and no evidence of phase separation and easy of removal. Resveratrol Antiaging cream having antioxidant property could be used as a safe, stable, homogeneous and effective topical formulation to protect and avoid aging of skin.

Keywords: *Resveratrol, antioxidant , antiaging*

PT/ST1/0087

Formulation and characterization of solid lipid nanoparticle loaded mucoadhesive thermoreversible nasal in-situ gel of Ropinirole hydrochloride for Parkinson's disease

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Abstract: Parkinson's disease is a CNS degenerative ailment results due to the death of dopamine-generating cells in the substantia nigra. Administering Ropinirole hydrochloride (ROP) nasally as a selective nonergoline dopamine D2 receptor agonist, which promotes the production of dopamine by striatal dopamine receptors. The main objective of the study was to develop and evaluate SLN loaded *in situ* nasal gel of ROP for assuring site specific targeting and enhancing bioavailabilty. By using a double emulsion technique, SLNs of ROP were formulated and then cold-incorporated into an *in situ* gel matrix made up of poloxamer 407 and HPMC K4M. Formulations exhibited gelation at nasal temperature, and it was discovered that the gelation period was less than the mucociliary clearance time. Due to mucoadhesion and increased gel strength, it was observed that the nasal residence time had risen. The ex vivo drug release for the optimised nasal gel formulation showed sustained release pattern of 81.26 ± 1.5 upto 12 hours. It can be inferred that the ROP SLN loaded intra nasal *in situ* gel can successfully cross mucous membrane, reach systemic circulation and provide sustained drug release for 12 hours. Hence intranasal delivery of ROP by SLN loaded intranasal in situ gel can be a very promising approach for patients suffering from Parkinson's disease.

KEY WORDS- *In situ gel, Parkinson's disease, SLN, Poloxamer 407, HPMC K4M*

PT/ST4/0053

In Silico And In Vitro Study on Anticancer Property Of Acalypha Indica Linn In Oral Squamous Cell Carcinoma

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Abstract

Oral squamous cell carcinoma (OSCC) is a malignant epithelial neoplasm affecting the oral cavity. Acalypha indica Linn (A. indica) is an annual erect herb which belongs to family Euphorbiaceae has multiple medicinal properties. The main objective of the present study was to evaluate the cytotoxic activity of A. indica using KB oral carcinoma cell line by MTT assay. Identify the phytoconstituent of A. indica which is having high affinity towards oral cancer target Survivin by in silico method. In silico molecular docking study used for all main compounds from A. indica to identify which compounds interact with the target protein survivin (2QFA). The methanolic extract of A. indica (aerial parts) prepared by cold maceration and the crude extract 6.25, 12.5, 25, 50, 100µg/ml were used on KB cell line when compared with control DMSO by MTT assay. Polymerase chain reaction (PCR) were used for expression of protein survivin in KB cell line. In in silico study, Acalyphin amide showed best docking score (G score -6.378) were identified. The crude extract at 100µg/ml have shown more cytotoxic effect in KB cell line by MTT assay and found that down-regulates the expression of survivin protein by PCR. The in vitro study clarifies the anticancer activity of A. indica in OSCC. The results obtained from in silico study, Acalyphin amide can be subjected to further isolation and purification process for the treatment of OSCC.

Key words: Acalypha indica Linn, KB cell line, Survivin.

PT/ST4/0054

"Phytochemical and pharmacological investigation (Antinephrolithiatic Action) of the plant Mimosa pudica Linn."

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Abstract

Mimosa belongs to the taxonomic group Magnoliopsida and family Mimosaseae. In Latin it is called as Mimosa pudica Linn. Ayurveda has declared that its root is bitter, acrid, cooling, vulnerary, alexipharmic. It is used in the treatment of leprosy, dysentery, vaginal and uterine complaints, and inflammations, burning sensation, asthma, leucoderma, fatigue and blood diseases. Decoction of root is used as gargle to reduce toothache. It is very useful in Nephrolithiasis, diarrhea (athisaara), amoebic dysentery (raktaatisaara), bleeding piles and urinary infections. This review gives a brief compilation of its phytochemical and pharmacological activities.Wistar rats were divided in to 15 groups containing six in each. All animals had free access to regular rat chow and drinking water ad libitum. Renal calculi were induced in group II to XV by intraperitoneal injection with 7 mg of sodium oxalate per 100g of body weight in a 0.22M sodium oxalate for 10 days. After administration of sodium oxalate (1hr), group IV, V and X, XI were treated with Petroleum ether extract of Mimosa pudica leaves and roots respectively. Group VI, VII and XII, XIII were treated with Alcoholic extract of Mimosa pudica leaves and roots. Group VIII, IX and XIV, XV were treated with Aqueous extract of Mimosa pudica leaves and roots. On 11th day of the experiment animals were housed in metabolic cages and 6 hours urine samples and serum samples were collected. At the end all the animals were sacrificed, the kidneys were removed and subjected to histopathological study to observe the renal tubular damage caused by deposition of

PT/ST5/023

A REGION WISE SURVEY OF KNOWLEDGE ABOUT TRAVEL-RELATED INFECTIOUS DISEASES AMONG COMMUNITY PHARMACISTS

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Abstract: Community pharmacists 'knowledge regarding management of travel related infectious diseases can directly benefit the general public. The main aim is to assess knowledge of community pharmacists regarding travel related infectious diseases. Knowledge-based questionnaires were developed and validated for malaria, dengue, gastroenteritis and COVID - 19. The questionnaire was circulated to selected community pharmacists in certain districts of South Indian States (Tamil Nadu, Kerala, Karnataka, and Andhra Pradesh) through google form links to their mobile numbers or email addresses. The responses were collected and analyzed. Among 450 enrolled pharmacist 415 were responded to questionnaire. There were about 25% of respondents from each South Indian state among the 415 responses; 237 (57.10%) male and 143(42.89%) female community pharmacists responded. About 79% of responders had a graduate pharmacy degree, 26.5% were pharmacy diploma holders and 2.1% of them had a postgraduate degree in pharmacy. With respect to dengue fever, > 70% of pharmacists had fairly good knowledge except for the vector responsible for causing the disease. More than 50% of the responders had good knowledge about malaria, except for the choice of drug for preventive therapy in pregnancy and availability of a malaria vaccine. Most of the pharmacists (> 80%) had good knowledge about COVID-19, about 45% of them showed good understanding about gastroenteritis. Responders from Kerala fared better than those from other states. Knowledge of community pharmacists about certain infectious diseases was satisfactory, providing opportunities to expand their knowledge is encouraged.

Keywords: *Travel related infectious diseases, Dengue, Malaria, COVID-19, Gastroenteritis, Community pharmacists.*

PT/ST5/025

POST COVID RESPIRATORY SEQUELAE AND THEIR MANAGEMENT IN A TERTIARY CARE TEACHING HOSPITAL

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Abstract: A broad spectrum of symptoms that develop during or after COVID-19 (Coronavirus) and continue for ≥ 2 months have an impact on the patient's life. The present study was conceived to assess the post-COVID respiratory sequelae and their management. The post-COVID respiratory symptoms were identified in patients with and without comorbid respiratory conditions based on history, physical examination, and clinical investigation like spirometry, chest x-ray, and CT thorax. COVID patients were categorized into acute and long COVID. Their pharmacological treatment was analyzed. A retrospective cross-sectional study was conducted on 100 COVID-confirmed patients. 74.7% and 22.7% of patients showed respiratory and non-respiratory symptoms. 45.3%, 39.4%, 69.2% of patients had breathlessness, cough, or wheeze that is more likely to occur in the 1st month of history of COVID, and 31% of patients had a cough that is more likely to occur in > 2 months of COVID. 51.4% and 64% of patients with or without respiratory comorbidities had long COVID. The post-COVID respiratory symptoms were found to be breathlessness, cough, and wheezing. The acute COVID symptoms were breathlessness, cough, wheezing and long COVID symptoms were chest tightness, fatigue, wheezing and cough. 7.5%, 4.4% and 5.6% of patients used Neb. Ipratropium Bromide and Formoterol, Cefixime, and corticosteroids, respectively.

Keywords: *Post COVID, Pharmacological treatment, Long COVID, Respiratory comorbidities.*

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PT/ST1/00180

FORMULATION AND IN-VITRO EVALUATION OF SERTACONAZOLE ENTRAPPED MICROSPONGE BASED DRUG DELIVERY SYSTEM

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Abstract: Sertaconazole is an imidazole derivative, which act as fungistatic, fungicidal, antibacterial, anti-inflammatory, antitrichomonal, antipruritic. Sertacoanzole inhibits 14 α-demethylase which blocks ergosterol synthesis resulting in prevention of fungal cell multiplication and hyphae growth. The goal of the current study is to create a topical formulation that delivers the medication in a regulated manner, minimize side effects, and increase the effectiveness of the final product, with aid of microsponges. Microsponges loaded with sertaconazole were prepared by using quasi developed emulsion solvent diffusion with seven different proportions of polymer Eudragit RS100. The developed microsponge were analysed for particle size, production yield, entrapment efficiency and drug content. Scanning electron microscopic images of microsponges revealed that they are spherical in shape and contain pores. *In vitro* drug release results depicted that microsponges with 7:1 drug polymer ratio were more efficient to give extended drug release of 92.02% at the end of 24 hrs. Microsponge were then incorporated in to Carbopol gel and evaluated for pH, viscosity spredability and diffusion study. Thus, the formulated microsponges based gel of Sertaconazole would be a promising alternative to conventional therapy for safer and efficient treatment of various skin disorders like Athlete's foot, Tineapedis.

Keywords: *Micro-sponges, Sertaconazole, Eudragit RS100, Controlled drug release, Carbopol gel.*

PT/ST1/00182

SOLUBLITY ENHANCEMENT OF ARTEMETHER USING SOULPLUS BY SOLID DISPERSION TECHNIQUE

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Abstract: To stop the infection of other people and advance the cause of eradication, it is crucial to develop medications that target the transmission and stages of the mosquito life cycle. Artemether (ART), which is an active component of the Chinese herb qinghao, also known as Artemesia annua, has demonstrated efficacy against acute, uncomplicated, and severe falciparum malaria. It is a member of the artemisinins family. Chloroquine-sensitive and chloroquine-resistant strains of P. falciparum are both susceptible to it. It also works against P. vivax. the treatment of cerebral malaria is also recommended. Due to ARTM's limited oral bioavailability the therapeutic potential of the drug is, however, significantly delayed. Because ARTM is poorly soluble in water, it has a low bioavailability. The most optimal way for improving the solubility and dissolution of medications that aren't very water soluble is the solid dispersion method. By creating solid dispersions utilising Soluplus at various ratios using spray drying technology, the study's goal was to increase the solubility and dissolution rate of artemethrin. By using differential scanning calorimetry and Fourier transform infrared spectroscopy, prepared solid dispersions were characterised. Less crystallinity and faster rates of dissolution were detected in the spray-dried solid dispersions. The ideal medication to Soluplus ratio, according to results from a solubility study, is 1:3. Studies on the dissolution of solid dispersions revealed more drug release as compared to pure drug. So, we draw the conclusion that increasing the drug's rate of dissolution may be possible using an amorphous solid dispersion of artemether.

Keywords: *Solid Dispersion, Artemether, Soluplus, Solubility Enhancement.*

PT/ST5/034

A COMPARATIVE STUDY: RISK FACTORS OF ACUTE CORONARY SYNDROME AMONG YOUNG AND OLDER PATIENTS

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Abstract: Acute coronary syndrome (ACS), refers to a group of conditions that suddenly stop or severely reduces blood flow to the heart muscles such that a part of heart muscles is unable to function properly or dies. When compared with older population acute coronary syndrome is low in youth. The aim of this study was to assess the risk factors of Acute coronary syndrome among younger and older patients. A comparison study was conducted in a 700 bedded tertiary care teaching hospital, for a period of 1 year. The population of the study included is 286 patients. Patient were divided into two groups, 1) elderly $\geq$ 60 years 2) younger < 60 years. Equal numbers of patients were included in each group. Data collection focused on patient demographics, reason for admission, final diagnosis, past medical history, Eelectrocardiogram findings, laboratory investigations etc. The mean age was 56.2 $\pm$ 7.7 and 71.8 $\pm$ 6.24 for young and older patients respectively. The study clearly shows male predominance with a percentage of 67.83 % and female with 32.7%. Dyslipidaemia, physical inactivity, hypertension was the most significant risk factor for Acute coronary syndrome in elderly (p value < 0.001), while smoking, alcoholism was in younger patient (p value < 0.001) compared to older patients. Younger patients with Acute coronary syndrome had different atherosclerotic risk profile compared with older patients. Emphasis should be given on the proper management of major modifiable risk factors.

Keywords: *Acute coronary syndrome, dyslipidaemia, risk factors, hypertension.*

PT/ST5/037

SODIUM-GLUCOSE CO-TRANSPORTER 2 INHIBITORS ASSOCIATED RISK OF URINARY TRACT INFECTION AND GENITAL MYCOTIC INFECTION IN TYPE-2 DIABETES MELLITUS PATIENTS IN TERTIARY CARE HOSPITAL

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Abstract: Sodium Glucose cotransporter -2 inhibitors (SGLT2i) are found to improve the cardiac and renal functions, but its mechanism of lowering blood glucose by promoting glucose excretion in urine increases the risk of Urinary Tract Infection (UTI) & Genital Mycotic Infection (GMI). US-FDA issues warning about its potential to cause UTI & GMI, despite its benefits. But recent reviews of US Database failed to uncover evidence of increased risk of UTI & GMI on SGLT2i users. These conflicting reports paved way for our study. To Study the risk of UTI & GMI associated with use of SGLT2i in Type-2 Diabetes Mellitus (T2DM) patients in tertiary care hospital. Observational Prospective Cohort study conducted for a period of 6-months. T2DM patients who are newly initiated with Sulfonylurea (SU) / Dipeptidyl peptidase 4 inhibitors (DPP4i) / SGLT2i along with Metformin are represented as separate groups respectively. Treatment group A (metformin+SU), B (metformin+DPP4i), C (metformin+ SGLT2i). The risk of UTI & GMI was assessed using UTI & GMI assessment Questionnaire. Medication adherence was ensured with Medication Adherence Rating Scale (MARS) score. Statistical analysis is done on data received, after 12-week follow-up with 477 participants. On comparison between groups, risk of UTI among those who are newly initiated with SGLT-2 found to be statistically higher, with P value <0.027; on comparison within SGLT-2i group, Empagliflozin was found with higher incidence of UTI statistically by using Pearson Chi Square test. But, risk of GMI among those who are newly initiated with SGLT-2i found no statistical significance.

Keywords: *SGLT-2I, SU, DPP 4i, UTI, GMI.*

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IN-VITRO ANTI-SNAKE VENOM ACTIVITY OF THE LEAVES OF *AMPELOCISSUS ARANEOSA*

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Abstract

The objective for the current study was to investigate the *in-vitro* anti-snake venom activity of the leaves of *Ampelocissus araneosa*. It is a climbing shrub belonging to family of Vitaceae and named as Kattu Thiratchai in Tamil, Asvakathara and Kauraj in Sanskrit and Ghorvel in Hindi that is widely distributed in moist deciduous to evergreen forests of Tamil Nadu, Kerala, Karnataka and Maharashtra. The leaves contains 22-epicalamistrin, uvaribonin and chalcone and have traditionally been in use for the treatment of snakebite, fever, wounds, skin diseases, and headache. *In-vitro* anti-snake venom studies of the isolated compound of *Ampelocissus araneosa* revealed that the enzymes present in the *Naja naja* venom was inhibited by the isolated compound of *Ampelocissus araneosa*. This was evaluated by the acetylcholinesterase activity, indirect hemolysis assay and inhibition of fibrinolytic activity. Inhibition of acetylcholinesterase activity was performed to determine the percentage of inhibition produced by the isolated compound against the *Naja naja* venom. The indirect hemolysis assay was performed to determine the inhibition of phospholipase A_2 by the isolated compound. In the inhibition of Fibrinolytic activity the isolated compound showed effective reduction of fibrinolytic halo produced by the *Naja naja* venom. The isolated compound are 3-(4'-hydroxy-3'-methoxyphenyl) acrylic acid or 4-(2'-carboxyvinyl)-2-methoxybenzoic acid having small molecules with anti-venom activity were categorized based on their chemical structures. This works also reveals the scientific validation for the usage of isolated compound as an anti-snake venom drug.

Key Words: *Ampelocissus araneosa, Ethanolic extract, 3-(4'-hydroxy-3'-methoxyphenyl) acrylic acid or 4-(2'-carboxyvinyl)-2-methoxybenzoic acid, In-vitro anti-snake venom activity.*

PT/ST5/00121

A PROSPECTIVE STUDY ON PRESCRIPTION PATTERN OF ANTI-ACIDITY MEDICATIONS IN PATIENTS WITH CARDIAC DISEASES IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA.

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Abstract: The purpose is to study the prescription pattern of anti-acidity medications in patients with cardiac diseases and prescription pattern of anti-acidity medications in patients with coronary artery disease as reported from the outpatient section of cardiology department and incidence of patients using it. To identify the number of patients who are benefiting as well as not benefiting from anti-acidity medications. To analyse the side-effect profile after prescribing anti-acidity medications. Prospective cross sectional study research design was used. The sample constituted 275 patients categorized as those using Proton Pump Inhibitor, H2-antagonist and antacids. Baseline data was obtained by identifying the relevance of these medications. Follow up was conducted after 3 months to identify the adherence and effectiveness of drug. Population benefited from anti-acidity medications were identified. Patients with gastric disease even after 3 months were sent for gastroenterology reference. The protocol of the study was at first approved by the IEC. Among 275 patients, 218 used gastric medications and 56 didn't. Only 66.9 % of the patients continued to use medications after 3 months. A significant decline was also seen in the gastric symptoms exhibited by the patients.

Keywords: *Proton Pump Inhibitor, Anti acidity medication, Gastric symptom.*

PT/ST5/00122

AFTER EFFECTS OF EXCESSIVE ALCOHOL AND SMOKING AND BOTH WITH THE IMPACT OF PATIENT COUNSELING

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Abstract: Alcoholism and smoking are causing high threats in the society in the healthcare system. To analyze the extend of alcoholism and smoking in a particular population around Tamil Nadu and to view the impact of counselling for such people, this study was performed with the aim of giving awareness to the society and to show the importance to implement a system of deaddiction practice in the local populations. The study was carried out in a population around Komarapalayam, Tamil Nadu, India. A separate Data collection form was used to enter the details. A total of 60 cases were observed out of which 43.33% where only alcoholic, 8.33% where only smokers and 48.33% where consuming both. Nearly 80% of participants were in age group of 20-60 years. About 28.33% of participants had history of ulcer (11.66%), cardiovascular diseases (8.33%) and Diabetes mellitus (8.33%). The participants were then subjected to patient counselling regarding the consequences of alcoholism and smoking. This Short-term counselling demonstrated some effects on people who have just started the habits. Long-time habitual population were advised to undergo de-addiction in the nearby available de-addiction centre for which proper communication was facilitated. As we found that, more than half of the participants (56.66%) were alcoholic and smokers and which are the major known risk factors for the occurrence of lifestyle diseases, future research can be carried out for a preparation of an adequate action plan to reduce the consequences of alcoholism and smoking.

Keywords: *Alcoholic, Smoking, Prevalence, Counselling*

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Proceedings: 2020-2021

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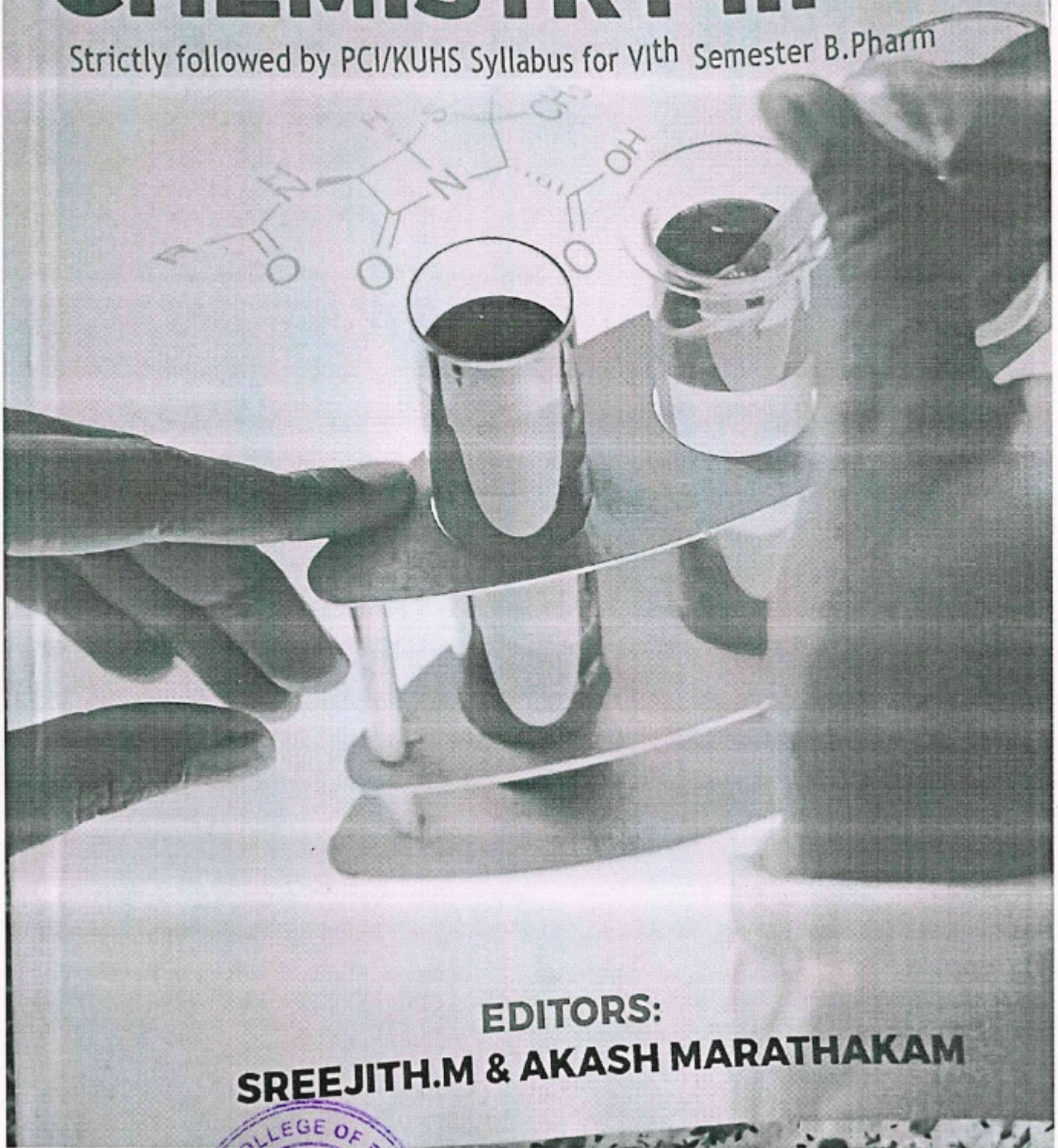

EDITORS:

SREEJITH.M & AKASH MARATHAKAM

Proceedings: 2019-2020

Sl. No.	Name of the teacher	Title of the book/chapters published	ISBN number of the proceeding	Name of the publisher	National / International
1	Dr. Akash Marathakam	molecular biology of nervous system	978-981-15-5166-6	Springer singapore	International
2	Dr. Akash Marathakam	Demographic and epidemiological aspect of aging	978-981-15-3551-2	Springer singapore	International

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Molecular Biology of Nervous System

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Abstract

Brain is the most complex organ in the body, and the nervous system, the knottiest enigma. The human brain has over a hundred billion neurons. More than the number of neurons, the complexity of the nervous system has more to do with how these neurons are connected to each other. The mind is believed to be the result of what the brain "does." But the neuronal microstructure of the brain is not architecturally static. The complexity runs deep. The dynamic nature of the brain allows it to be altered continuously throughout life, impelled by the very same mind that the brain creates. Thus, while mind is the functional result of the brain, the brain is also, at least partly, the construct of the mind's experiences, thoughts, and executive functions. This chapter is intended to serve as a brief introduction to neurotransmission and the many types of neurotransmitters.

1 Neurons

Neurons are the functional units of the nervous system. Brain processes information with the help of a colossal network of neurons that receive, process, integrate, and transmit bits of information [1]. A neuron can have multiple dendrites through

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B. Mathew, D. G. Thomas Parambi (eds.), *Principles of Neurochemistry*,
https://doi.org/10.1007/978-981-15-5167-3_1

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Demographic and Epidemiological Aspects of Aging

1

Della Grace Thomas Parambi, M. K. Unnikrishnan, Akash Marathakam, and Bijo Mathew

Abstract

With the unprecedented surge in geriatric populations, public health policies should prioritize plans for ensuring independence and dignity of elders. Demographic transformations have social, political, and economic implications that influence funding and provisioning geriatric care. While maximum life span is genetically determined, East Asia has shown the fastest improvements in life expectancy at birth, increasing from 45 years (1950) to 74 years (2005). 65-year olds would increase from 12.5% to 20% in the USA by 2030, while China and India would encounter larger numbers. Health promotion schemes and health care management strategies have propelled an abrupt rise in the survival rates of elders, accompanied by the increasing need for trained personnel, specialized care, and budgetary policies to earmark funds from young taxpayers to pay for geriatric care. "Compression of morbidity" hypothesis optimistically proposes that age-related disease and disability can be postponed to terminal years of life. Education, supportive technologies, and treatments improve the quality of life of elderly citizens in developed industrialized societies, but the obesity epidemic is a looming threat. Bioethicists warn that rising geriatric populations demand detailed plans to avert bankruptcy of insurance companies. It is important to understand that the infirmity of old age is, at least partly, the inevitable outcome of

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S. M. Nabavi et al. (eds.), *Nutrients and Nutraceuticals for Active & Healthy Ageing*,
https://doi.org/10.1007/978-981-15-3552-9_1

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Affiliated to Kerala University of Health Sciences, Accredited by NBA

Proceedings: 2018-2019

Sl. No.	Name of the teacher	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International
1	JEREENA E	Access to essential cardiovascular medicines in Kerala, the state with the highest cardiovascular disease burden in India	POSTER-Session 7: Public health 3759	ESC Congress 2019, together with World Congress of Cardiology	International

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P6147

Access to essential cardiovascular medicines in Kerala, the state with the highest cardiovascular disease burden in India

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Introduction: The 2030 Agenda for Sustainable Development has prioritized the reduction of premature mortality due to NCDs – including cardiovascular diseases (CVD) - by a third. To achieve this goal, countries must achieve 80% availability of affordable essential medicines. Essential medicines as identified by the World Health Organization are those that meet the priority healthcare needs of majority population. Globally, India has the second highest CVD burden with over 1.7 million deaths annually, with the highest CVD morbidity and mortality rate in Kerala.

Purpose: To evaluate the availability, prices and affordability of essential CVD medicines in Kerala state to facilitate implementation of informed public health policy.

Methods: Using WHO/HAI methodology, we obtained data on availability and prices for 25 essential CVD medicines in a representative sample of 7 public-sector hospitals (survey anchors) and 37 private retail pharmacies located near the survey anchors in four districts. Additionally, we obtained the data from 10 government-subsidized discount pharmacies. We report availability as percentage of surveyed facilities where a given medicine was found. Median prices ratios (MPRs) were calculated by comparing consumer prices to the MSH International Reference Prices (IRPs). Medicines were considered affordable if the monthly supply costs less than one-day's wage of the lowest paid government worker.

Results: In the public-sector facilities (hospital and discount pharmacies combined), the mean (SD) availability of the surveyed CVD medicines was 52% (35.3%) for generic and 35.3% (20.7%) for originator brand (OB) version. 28% of surveyed medicines (including amlodipine, clopidogrel, losartan, metformin) were available in over 80% pharmacies. 12% (captopril, streptokinase and glyceryl trinitrate) were not available in any of the facilities.

In the private sector, mean (SD) availability of generic and OB versions was 64.4% (37.2%) and 43.7% (34.6%), respectively. MPR was 1.28 [range: 0.02 (Insulin NPH) – 16.7 (simvastatin)] for both lowest-priced generics (LPG) and most-sold generics (MSG). The lowest paid government worker in Kerala would spend 0.06 - 3.48 days' wages for the monthly supply of essential CVD medicines in the private sector.

In government-subsidized discount pharmacies, mean availability was 49.3%. The generic medicine prices were 74% lower than in the private sector.

Conclusions: Availability of essential CVD medications in both public and private sector pharmacies fall short of the 80% target. In the private-sector, many essential CVD medications seem unaffordable especially considering the polypharmacy among CVD patients. Introducing policies to improve medicine availability in government-subsidized discount pharmacies is crucial in tackling Kerala's ever-increasing CVD burden.