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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

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Summary of books and chapters in edited volumes

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Summary

List of the books and chapters in edited volumes

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

Sl. No.	Name of the teacher	Title of the book/chapters published	Name of Publisher
Publishing Year 2020-21			
1	Dr. Suvarna P.Ingale	Pharmacotherapy of Neurochemical Imbalances in: Advances in Neuropharmacology: Drugs and Therapeutics	Apple Academic Press
2	Dr. Suvarna P.Ingale	Cysteine in Alzheimer's Disease: Redox Regulation of Protein Functions. In: Quality Control of Cellular Protein in Neurodegenerative Disorders.	IGI Global, February 2020.
3	Mr.Shubham V.Pawar	Codrugs: Optimum Use through Prodrugs (Recent Advancement in Prodrugs)	CRC Press Taylor and Francis Group
Publishing Year 2021-22			
4	Dr. Madhur Kulkarni	Pharmacokinetics & Toxicokinetic Considerations	Acedemic press
5	Dr. Madhur Kulkarni, Ms Roopal Bhat & Dr Suvarna Ingale	Book: Drug Delivery Technology Herbal Bioenhancers in Pharmaceuticals Chapter: Herbal bioenhancers in cancer drug delivery	De Gruyter STEM
6	Dr. Manasi Wagdarikar	BOOK :Ayurvedic remedies for the disease of microbial origin CHAPTER:Ayurvedic remedies for Dadru Kushta Page No. 131-147	Acedemic Decipher press
7	Mrs.Meghna Dabhadkar/Dr.Anagha Joshi	BOOK: Ayurvedic Remedies for Candidiasis & Tuberculosis CHAPTER: Ayurvedic remedies for Tuberculosis Page No:123-139	Acedemic Decipher press
8	Dr. Anagha Joshi/Dr. Pooja S. Janardan	BOOK :Ayurvedic remedies for the disease of microbial origin CHAPTER 12:Ayurvedic remedies for Hepatitis Page No. 151-166	Acedemic Decipher press
9	Dr.Shraddha P.Devarshi/Dr.Anagha Joshi	BOOK :Ayurvedic remedies for the disease of microbial origin CHAPTER 12:Ayurvedic remedies for Tuberculosis Page No. 151-166	Acedemic Decipher press

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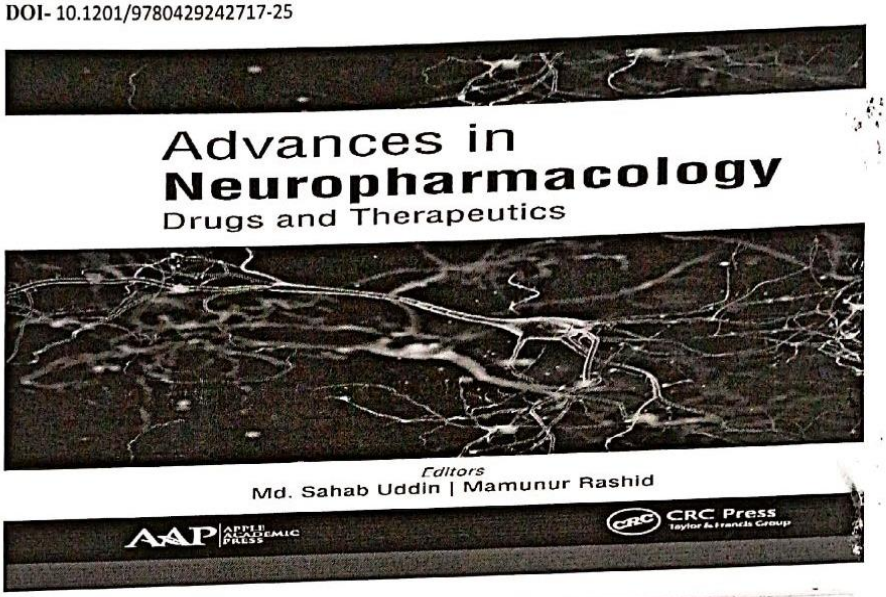
Additional documents of book chapters published

Publishing Year 2020-21

Author- Dr. Suvarna P.Ingale

DOI- 10.1201/9780429242717-25



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Home › Medicine, Dentistry, Nursing & Allied Health › Medicine › Neurology › Advances in Neuropharmacology › Pharmacotherapy of Neurochemical Imbalances

Chapter

Pharmacotherapy of Neurochemical Imbalances

By Rupali Patil, Aman Upaganlawar, Suvarna Ingale

Book Advances in Neuropharmacology

Edition	1st Edition
First Published	2020
Imprint	Apple Academic Press
Pages	34
eBook ISBN	9780429242717

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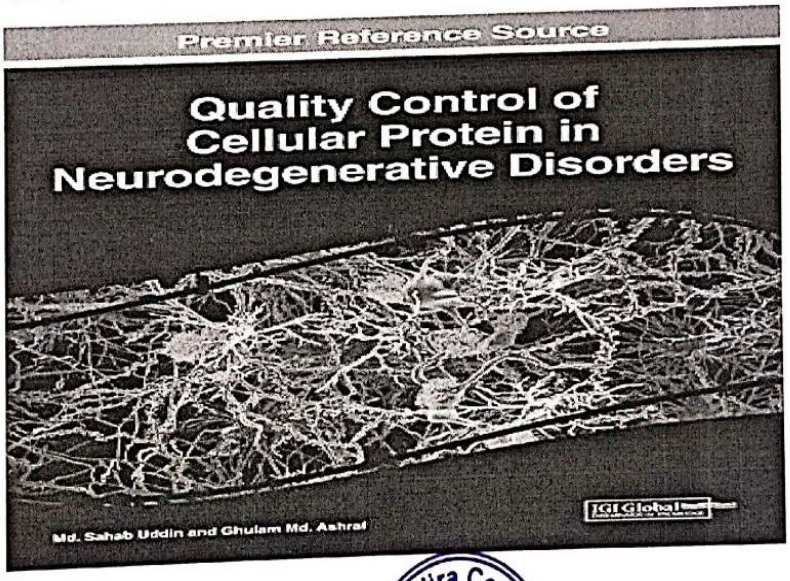
Author- Dr. Suvarna P.Ingale

DOI- 10.4018/978-1-7998-1317-0.ch013



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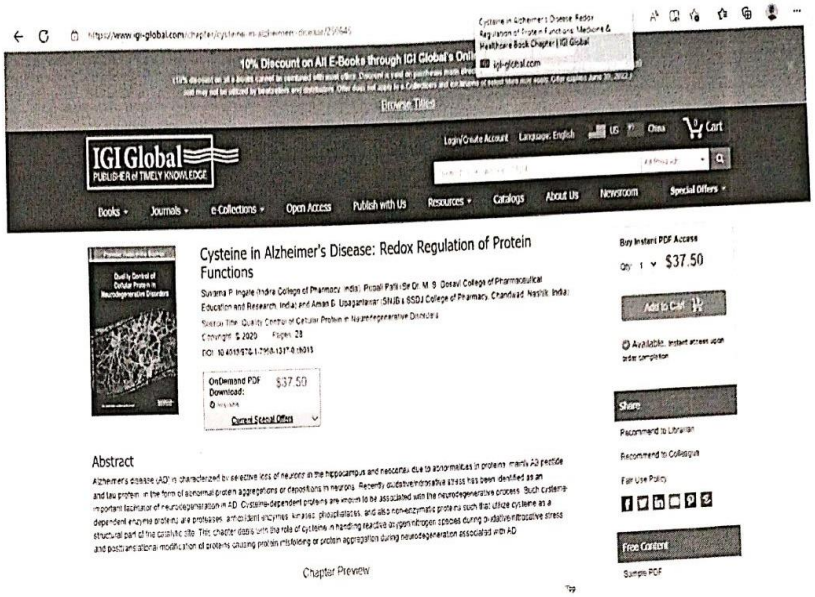

Cysteine in Alzheimer's Disease: Redox Regulation of Protein Functions

Suvarna P. Ingale, Indira College of Pharmacy, India; Rupali Patil, Sir Dr. M. S. Gosavi College of Pharmaceutical Education and Research, India; and Aman B. Upaganlawar, SNJB's SSDJ College of Pharmacy, Chandwad, Nashik, India

Source Title: Quality Control of Cellular Protein in Neurodegenerative Disorders

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DOI: 10.4018/978-1-7998-1317-8.ch013

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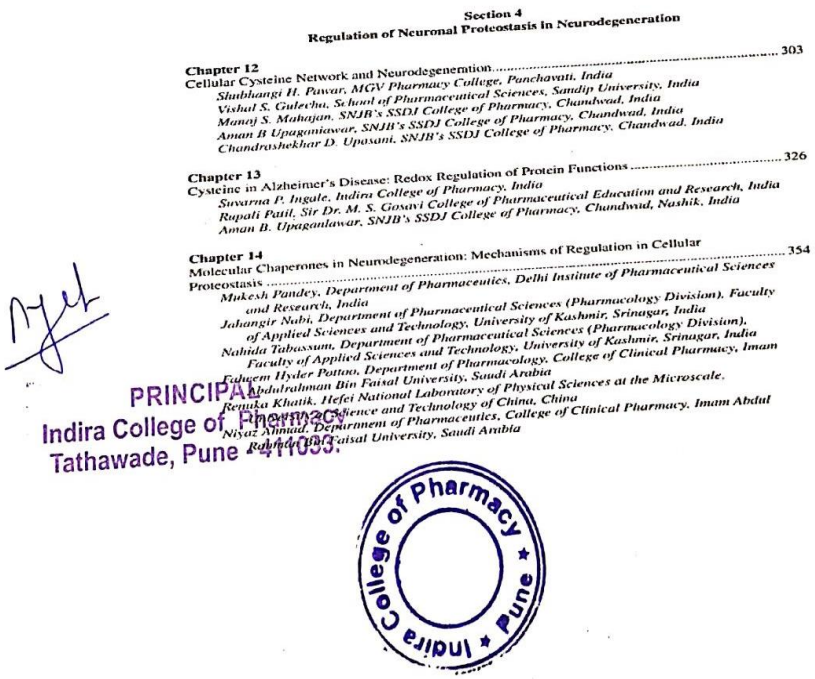
Abstract

Alzheimer's disease (AD) is characterized by selective loss of neurons in the hippocampus and neocortex due to abnormalities in proteins' mainly Aβ peptide and tau protein, in the form of abnormal protein aggregations or depositions in neurons. Recently oxidative/nitrosative stress has been identified as an important facilitator of neurodegeneration in AD. Cysteine-dependent proteins are known to be associated with the neurodegenerative process. Such cysteine-dependent enzyme proteins are proteases, antioxidant enzymes, kinases, phosphatases, and also non-enzymatic proteins such that utilize cysteine as a structural part of the catalytic site. This chapter deals with the role of cysteine in handling reactive oxygen/nitrogen species during oxidative/nitrosative stress and post-translational modification of proteins causing protein misfolding or protein aggregation during neurodegeneration associated with AD.

Chapter Preview



Section 4
Regulation of Neuronal Proteostasis in Neurodegeneration

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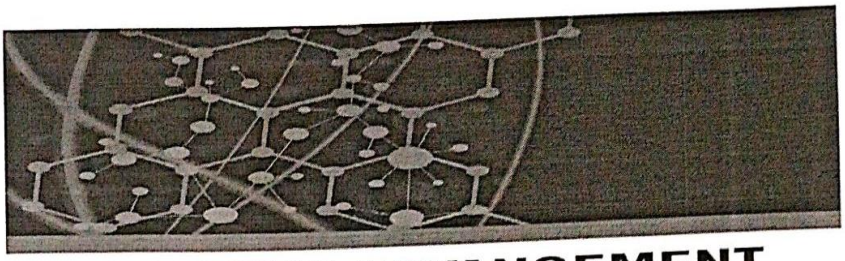
Author -Mr.Shubham V.Pawar

DOI- 10.1201/9780429328275-



RECENT ADVANCEMENT IN PRODRUGS

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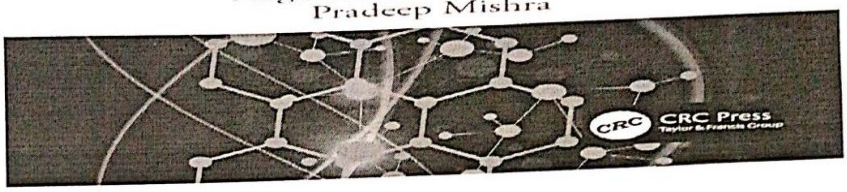

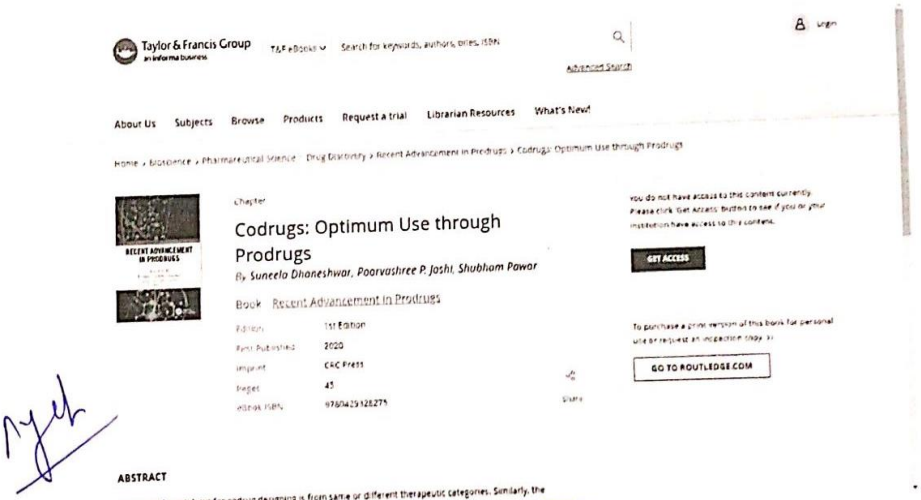

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GET ACCESS
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Chapter 2 | 45 pages
Codrugs: Optimum Use through Prodrugs
By Suneela Dhaneshwar, Poorvashree P. Joshi, Shubham Pawar
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Abstract

Chapter 3 | 25 pages
Role of Prodrugs in Drug Design
By Asadullah Madni, Sobia Noreen, Afifa Shafique, Abdur Rahim, Muhammad Sarfraz, Attia Afzal
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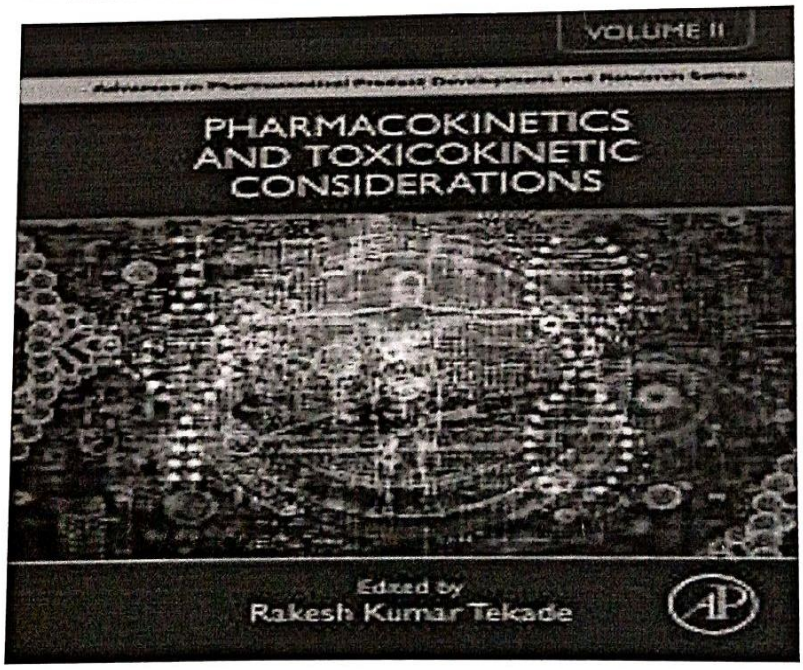
Abstract

Chapter 4 | 19 pages
Prodrugs for Enhancement of Lipophilicity

Publishing Year 2021-22

Author- Dr.Madhur Kulkarni

DOI- https://doi.org/10.1016/B978-0-323-98367-9.00005-6



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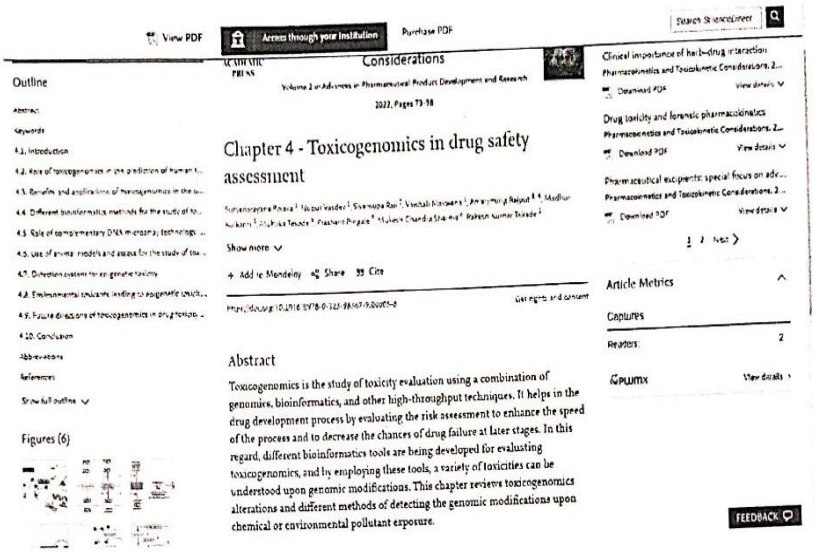

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Outline

Figures (6)

Considerations

Volume 2 of Advances in Pharmaceutical Product Development and Research

2022, Pages 73-98

Chapter 4 - Toxicogenomics in drug safety assessment

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Abstract

Toxicogenomics is the study of toxicity evaluation using a combination of genomics, bioinformatics, and other high-throughput techniques. It helps in the drug development process by evaluating the risk assessment to enhance the speed of the process and to decrease the chances of drug failure at later stages. In this regard, different bioinformatics tools are being developed for evaluating toxicogenomics, and by employing these tools, a variety of toxicities can be understood upon genomic modifications. This chapter reviews toxicogenomics alterations and different methods of detecting the genomic modifications upon chemical or environmental pollutant exposure.

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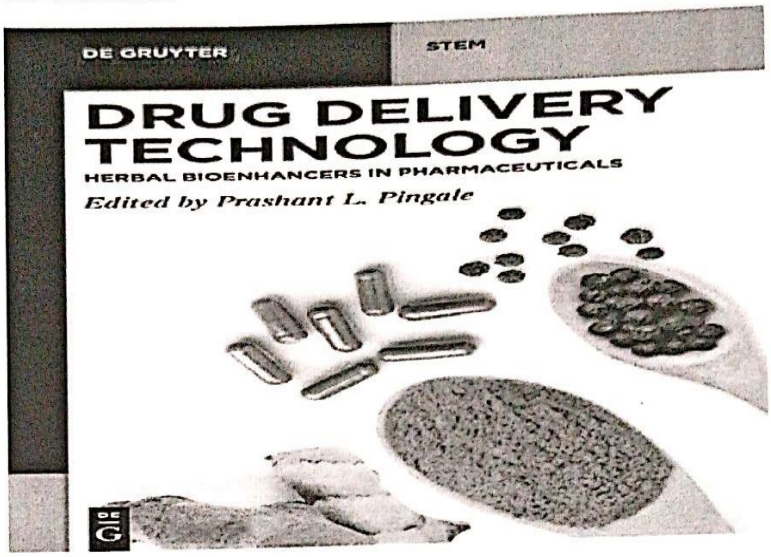
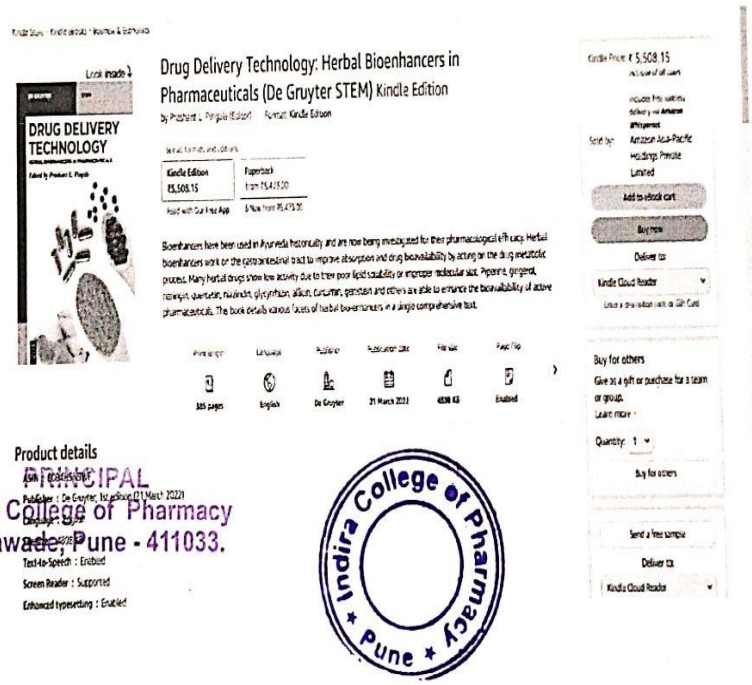
DOI- OL36768169M





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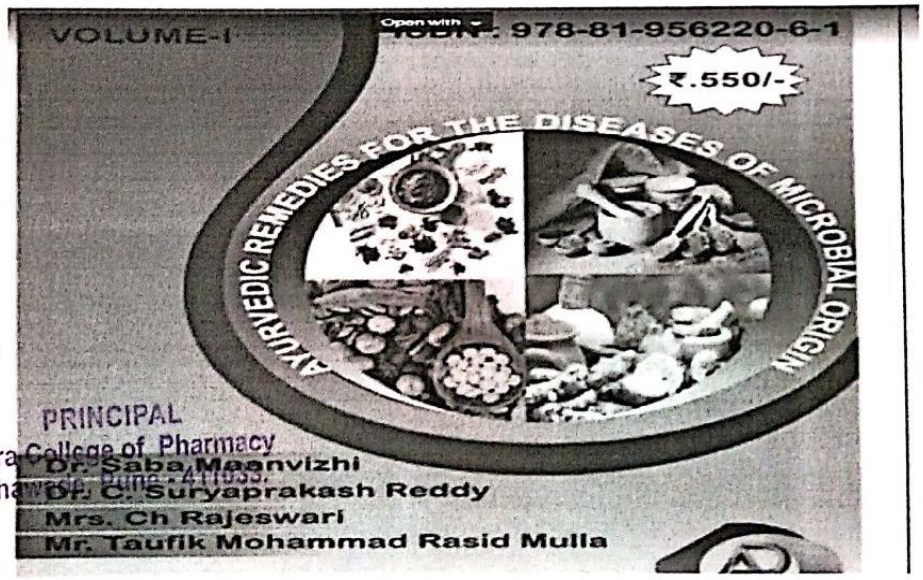
Dr. Manasi Wagdarikar, Dr.Anagha Joshi



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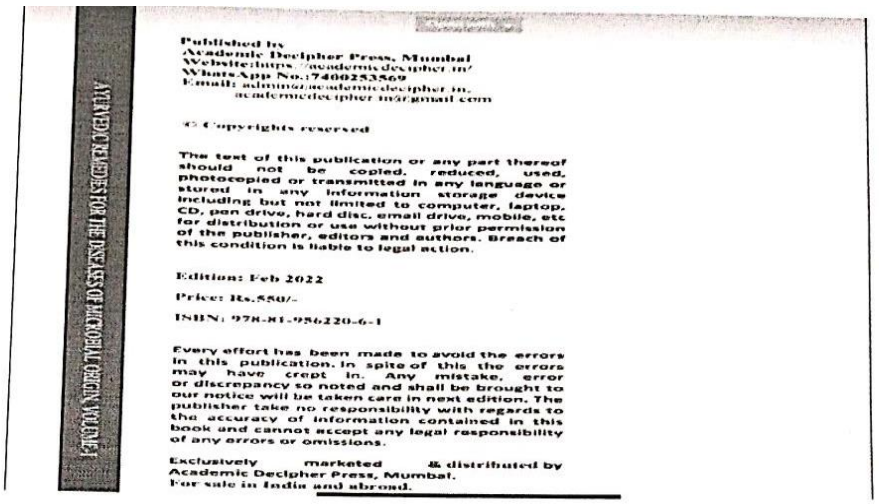

AYURVEDIC REMEDIES FOR THE DISEASES OF MICROBIAL ORIGIN, VOLUME-1

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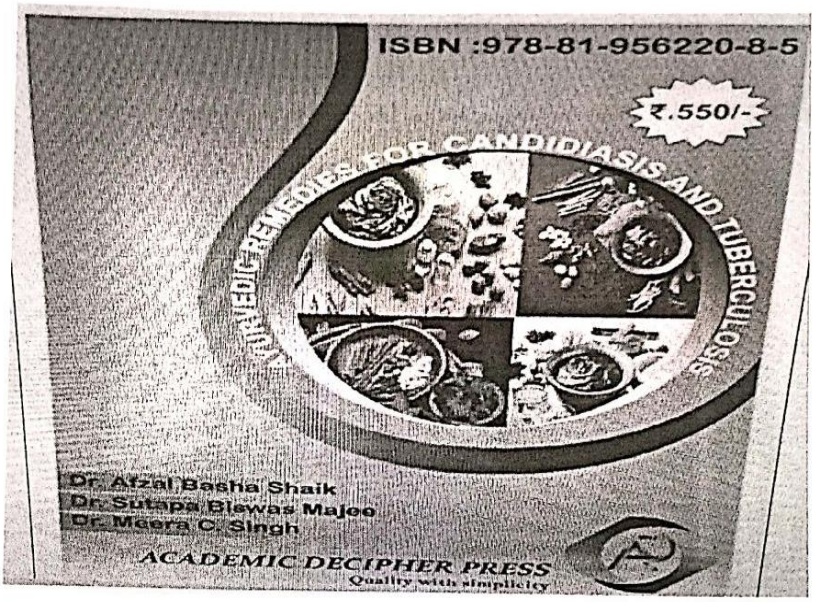

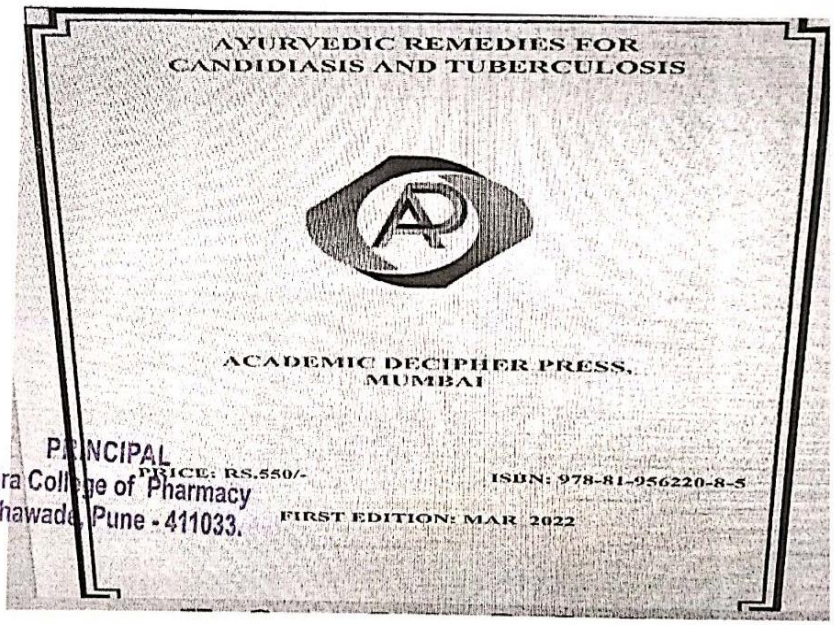

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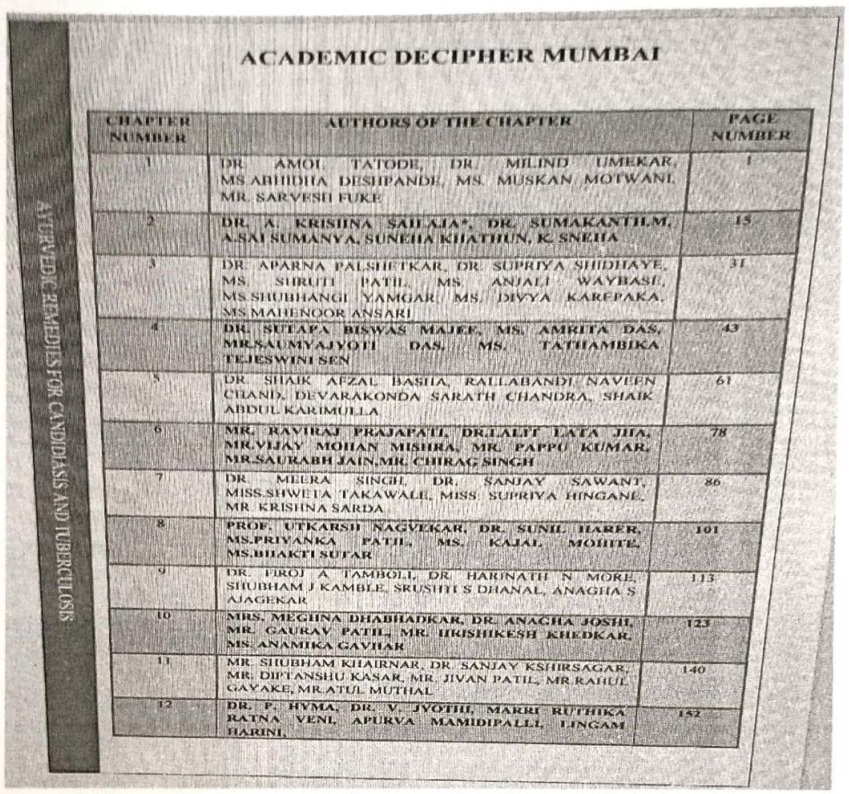

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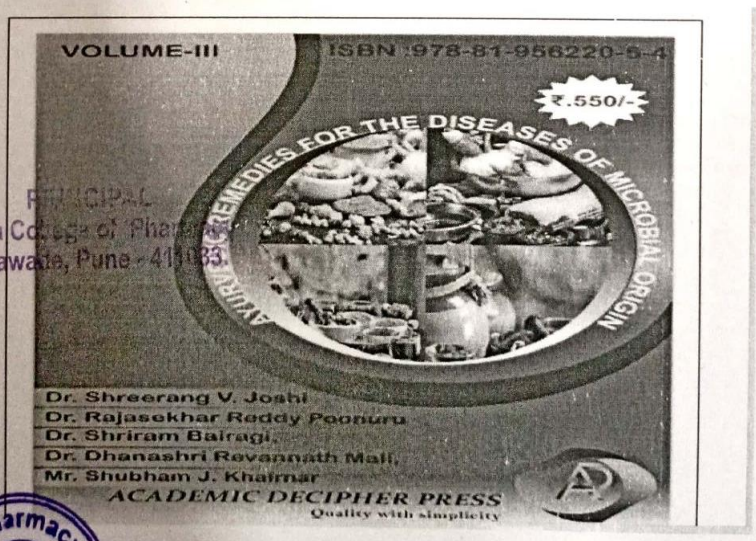

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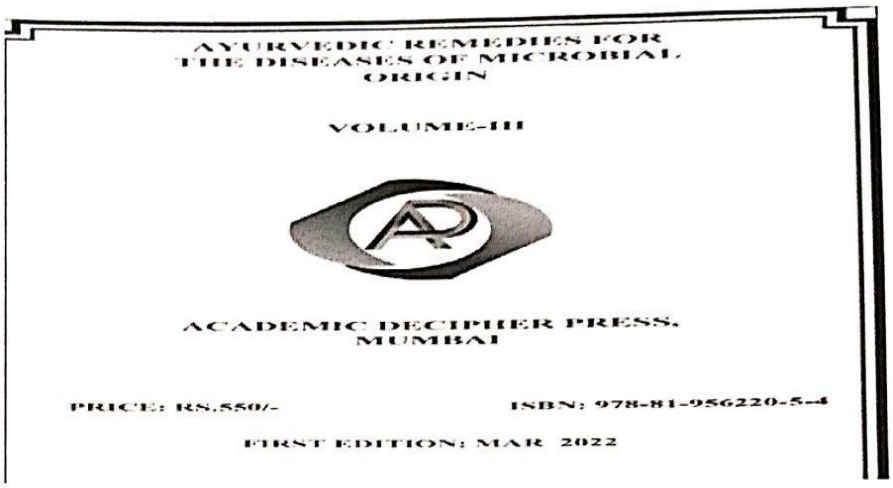

AYURVEDIC REMEDIES FOR THE DISEASES OF MICROBIAL ORIGIN

VOLUME-III

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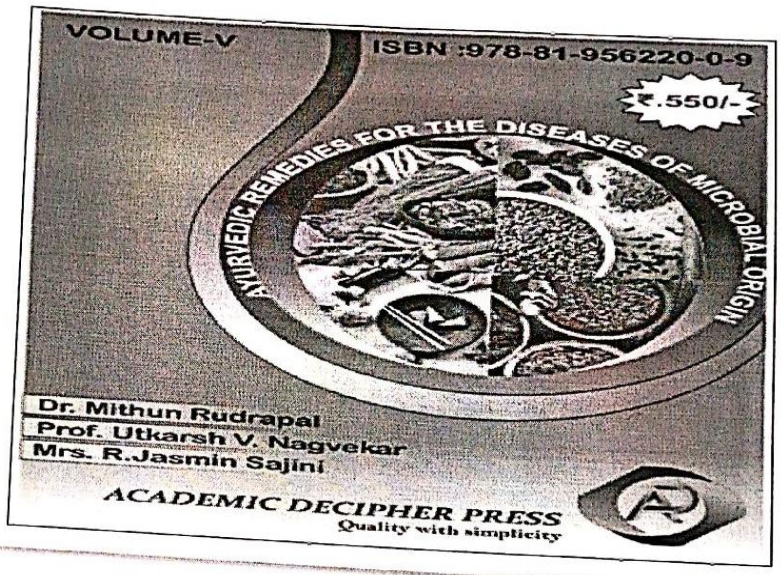
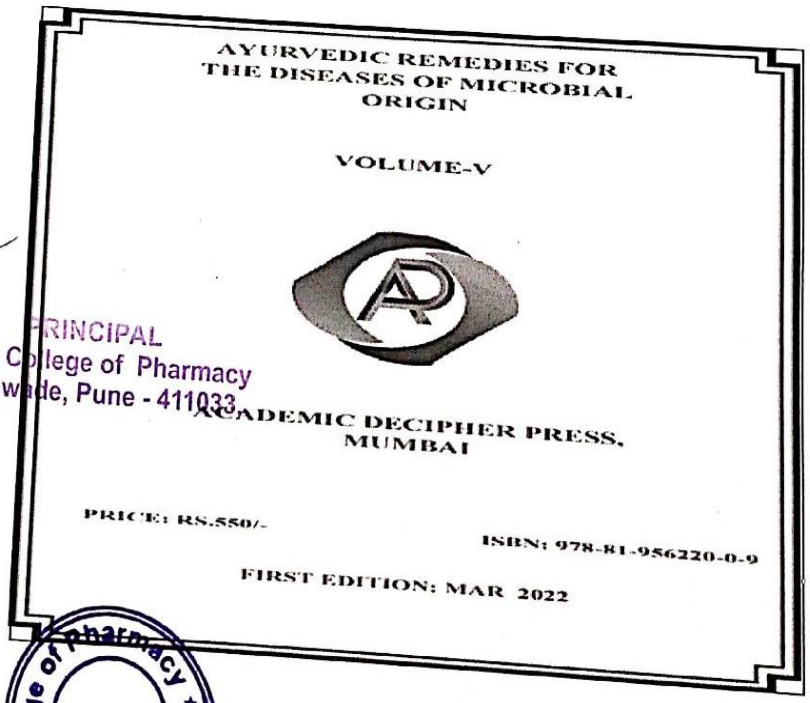
Author- Dr.Shraddha P.Devarshi/Dr. Anagha Joshi

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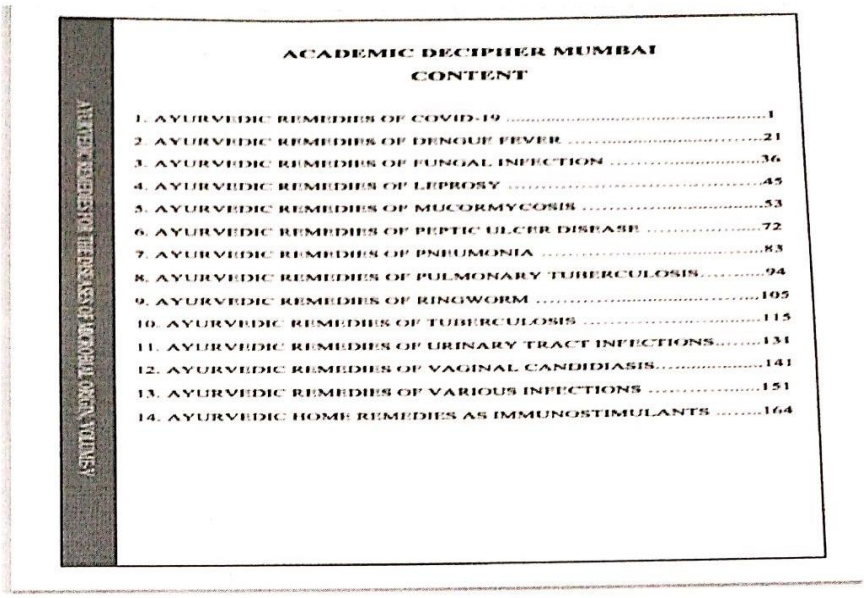

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Summary

List of papers published in national/ international conference

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 year

S.NO	Name of the presenter	Title of the Poster	Name of the Conference
		A.Y 2017-2018	
1	Dr. Anagha M. Joshi	An Analytical Method Development for Analysing Release & Permeation Profile Of Drug When Co-ordinated With Medicated Wines Containing One Or More Ingredients Of Trikates	Innovation 2017, Regional Research Conference Organized by Savitribai Phule University held at STES's Smt. Kashibai Navale College Of Pharmacy, Kondhawa
2	Madhur Kulkarni/Meghna Dabhadkar	Development of in-situ gel formulation of potassium nitrate for dentin hypersensitivity	17th International symposium of controlled release society- Indi Chapter on Advances Technology and Business Potentia of New Drug Delivery systems
3	Madhur Kulkarni/ Nisha Goge	Development of self-nanoemulsifying drug delivery system of capsanthin	17th International symposium of controlled release society- Indian Chapter on Advances in Technology and Business Potential of New Drug Delivery systems
4	Madhur Kulkarni/ Nikhil Khadkikar	Development of anti-dandruff gel formulation of fenugreek leaves extract	17th International symposium of controlled release society- Indian Chapter on Advances in Technology and Business Potentia of New Drug Delivery systems
		A.Y 2018-2019	
5	Dr. Shraddha P. Devarshi	Quality pf Life in Beta-Thalassemia patients: A review	Indian Congress of Pharmacy Practice 2018 & 3rd Convention of the Indian Association of College of Pharmacy
6	Dr. Archana M. Karnik	Formulation development and evaluation of bilayer tablets of Cilostazol and Aspirin	Excipients – The Key Drivers in Formulation Success
7	Dr.Vishakha Hastak	Formulation and evaluation of fast dissolving oral films of metoprolol tartrate	National Seminar on Excipients – The key drivers in formulation success organized by CRS
8	Dr.Vishakha Hastak/Dr.Madhur Kulkarni	Formulation and evaluation of mixture of bovine colostrum microspheres and probiotics for supportive treatment of ulcerative colitis	National Seminar on Excipients – The key drivers in formulation success organized by CRS

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9	Ms.Poonam Karekar	Enhancement of stability of ginger oil extract by loading into solid lipid nanoparticles	National Seminar on Excipients – The key drivers in formulation success organized by CRS
10	Dr.Amir Saikh	Solubility enhancement of poorly water soluble drug by solid dispersion	National Seminar on Excipients – The key drivers in formulation success organized by CRS
11	Dr.Vishakha Hastak/Dr.Madhur Kulkarni	Development and evaluation of antimicrobial patch containing mixture of tridax procumbens and nyctanthes arbortristis leaves extract	National Seminar on Excipients – The key drivers in formulation success organized by CRS
12	Dr..Madhur Kulkarni	Development and evaluation of taste masked dry syrup formulation of potassium chloride (KCl)	National Seminar on Excipients – The key drivers in formulation success organized by CRS
13	Dr.Amir Saikh	Solubility enhancement of celecoxib using different solubilization approaches	National Seminar on Excipients – The key drivers in formulation success organized by CRS
		A.Y 2019-2020	
14	Dr..Madhur Kulkarni	Ivrt of acyclovir semisolid formulations using immersion cells: study of effect of test and formulation variables	18th International symposium of controlled release society- Indian Chapter on Advances in Technology and Business Potential of New Drug Delivery systems
15	Dr.Madhur Kulkarni/ Roopal Bhat	Chronomodulated delivery system of metoclopramide hydrochloride: an effective therapy for gastric paresis and morning sickness	18th International Symposium of Controlled Release Society Indian Chapter
16	Mrs.Rutuja Kamble	Repurposing Drugs for the COVID-19: A New Perspective	
		A.Y 2020-2021	
17	Dr. Madhur Kulkarni/ Ms. Roopal Bhat	Effect of borneol on permeability of BCS Class III drug in self nanoemulsifying drug delivery system	19th International Symposium on Advances in Technology and Business Potential of Novel Drug Delivery Systems

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18	Mrs. Rutuja Kamble	Pharmaceutical intellectual property rights: Current Perspective of Modern India	International e-Poster Competition on "Emerging Trends in IPR"
19	Dr. Madhur Kulkarni	To compare quality of granules of ibuprofen obtained from super gran™ and rapid mixer granulator	19th International Symposium on Advances in Technology and Business Potential of Novel Drug Delivery Systems
20	Ms Nitisha Soni	Development and characterization of pegylated liposomes for oral delivery of insulin	"Translational Research for Nanomedicine"(oral Presentation)
21	Dr. Mansi Wagdarikar/ Dr.Madhur Kulkarni	Application of dissolution for evaluation of taste masking effect of Primaquine Phosphate complex developed with ion exchange resins	DRPI 2021 (Oral Presentation)
22	Ms Roopal bhat/ Dr.Madhur Kulkarni	Comparative in vitro dissolution of itraconzole marketed formulations:Cause and Effect analysis	Dissolution Research Presentation India 2021 (Oral Presentation)
23	Dr.Madhur Kulkarni	Repurposing niclosamide for Covid-19 treatment	Pharmaceutical research and innovations to tackle future healthcare arena
24	Mrs. Rutuja Kamble	Molecular docking,ADMET study & computational investigation of 1,5-diphenyl-2,4-disubsituted-1H-Imidazole.	Clinical Pharmacy Practice and Research (ICCPPR-2022)

Dr.Anagha M. Joshi
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Indira College of Pharmacy
(Principal)

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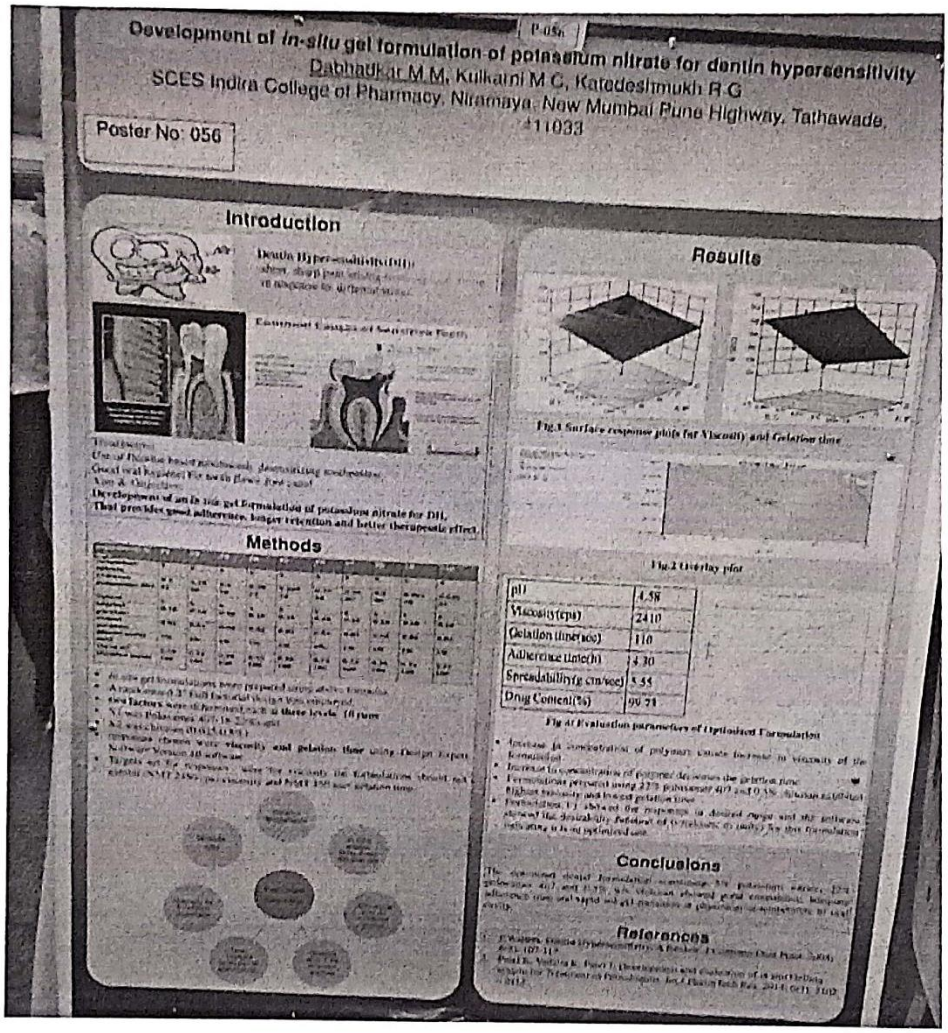
Additional documents of paper presented conference proceedings

A.Y 2017-18

Author- Madhur Kulkarni/Meghna Dabhadkar



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Author- Madhur Kulkarni/ Nisha Goge

DEVELOPMENT OF SELF NANO EMULSIFYING DRUG DELIVERY SYSTEM OF CAPSANTHIN

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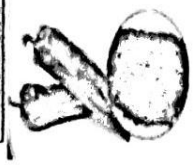
SCES Indira College of Pharmacy, Nirmaya, New Mumbai Pune Highway, Talhawade, Pune-411033

P-066

Introduction

Capsanthin, an intensely red coloured pigment isolated from the red ripe fruit of paprika (*Capsicum annuum L.*) is a carotenoid having very potent chemo-preventive activity[1]. However, its application as a natural colourant and as an antioxidant is limited by its very poor aqueous solubility.



Aim

To develop self nano emulsifying drug delivery system (SNEDDS) of capsanthin in order to improve its aqueous solubility and rate and extent of dissolution.

Methods

Solubility studies: Solubility of capsanthin in various oils, surfactants and co-surfactants was determined by shake flask method.

Construction of ternary phase diagram: The ternary phase diagram was constructed for Captex 300, Cremophor RH 40 and Capmul MCM by dilution method.

Preparation of SNEDDS with capsanthin:
Captex 300, Cremophor RH 40, Capmul MCM and BHT (0.5%) in different ratios

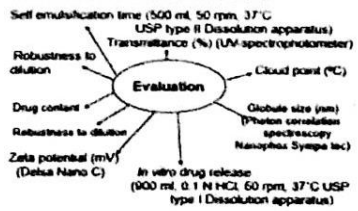
↓ mixed for 15 min

30 mg capsanthin was dissolved by warming and sonication.

↓

Formulations were observed for isotropicity and were stored at 2-8°C until further use.

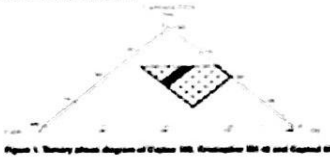
Characterization of SNEDDS formulations:



Results

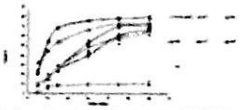
Solubility studies

Oil	Solubility (mg/ml)	Surfactant	Solubility (mg/ml)
Captex 300	74.4±1.45	Cremophor RH 40	0.42±0.24
Castor oil	55.14±1.62	Solutol HS 15	0.16±0.11
Co-Surfactant	Solubility (mg/ml)	K-TPGS	2.45±1.09
Capmul MCM	23±0.74		



Evaluation of SNEDDS

Formula	Cloud point (°C)	Globule size (nm)	Zeta potential (mV)	Drug content (%)
F1	78±0.81	46.37	-2.72	98.22±0.45
F2	71.8±2.87	137.24	-1.38	97.38±0.57
F6	67±1.63	41.77	-3.81	98.04±0.92
F7	74±2.08	98.17	-0.93	98.36±0.89
F8	76.5±1.35	70.66	-8.44	98.24±0.88
F9	73±1.63	234.81	-1.53	99.08±0.74



Conclusion

SNEDDS of capsanthin prepared using optimized concentration of Captex 300, Cremophor RH 40, Capmul MCM showed remarkably enhanced solubility and dissolution rate as compared to pure drug.

References

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2. Maoka, et al. "Cancer chemopreventive activity of carotenoids in the fruits of red paprika Capsicum annuum L." Cancer Letters172 (2001).

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Author-Madhur Kulkarni/ Nikhil Khadkikar

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DEVELOPMENT OF ANTI-DANDRUFF GEL FORMULATION OF FENUGREEK LEAVES EXTRACT

Mr. Khadkikar N.J., Dr. (Mrs.) Kulkarni M.C., Mrs. Hastak V, Mr. Jadhav V.S.
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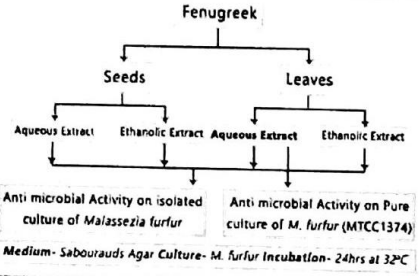
INTRODUCTION

AIM

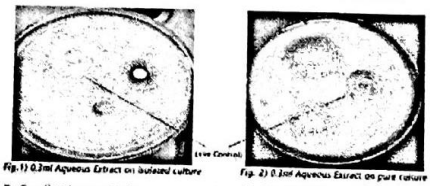
To develop Fenugreek based formulation for the treatment of dandruff.

PREPARATION OF EXTRACTS



EVALUATION OF EXTRACTS

A. ZOI shown by aqueous and ethanolic extract of fenugreek leaves on isolated and pure cultures MTCC1374 culture of *M Furfur*.



B. Qualitative analysis (Phytochemical evaluation)

Test	Inference
Molisch test	Carbohydrates present
Ninhydrin test	Amino acids present
Biuret test	Proteins present
Dragendroff test	Alkaloids present
Flavanoid test	Flavanoids present

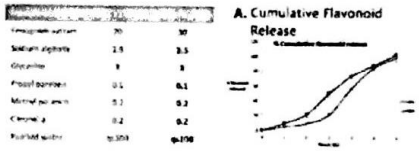
C. Quantitative analysis (Total Flavonoid Contents)

- The crude aqueous extract yielded the highest total flavonoid content(22.85±2.47µg/ml)
- Quercetin was used as standard

FORMULATION DEVELOPMENT

A. Selection of gelling agent- Cellulose derivatives like various grades of HPMC, HPC, Sodium CMC, Chitosan, **Na Alginate**, Carbopol etc

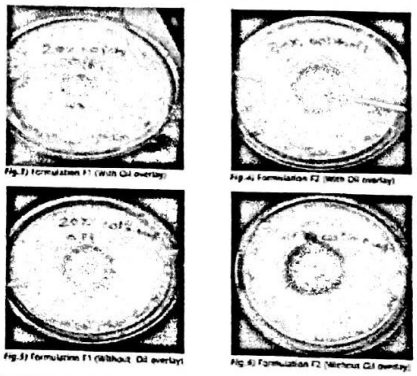
EVALUATION OF ANTI-DANDRUFF GEL FORMULATIONS



A. Cumulative Flavonoid Release

B. Evaluation of anti-dandruff gel formulations

C. Anti-dandruff activity of gel formulations.



CONCLUSION

- The formulated gel (F2) using (2.5%) sodium alginate as a gelling agent and 30% aqueous extract showed effective viscosity, spreadability, assay, flavonoid release properties along with good zone of inhibition in both the method (with and without overlay of oil)
- Aqueous extract of the *Trigonella foenum graecum L.* showed anti-dandruff activity against *Malassezia furfur*.
- Aqueous extract of *Trigonella foenum graecum L.* was incorporated in to gel formulation showed promising anti-dandruff activity.

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- Pingili M, Vanga S, et al "Antifungal activity of plant extracts against dandruff causing organism *Malassezia furfur*", International journal of bioassay; 5.11:5047-5049 (2016).

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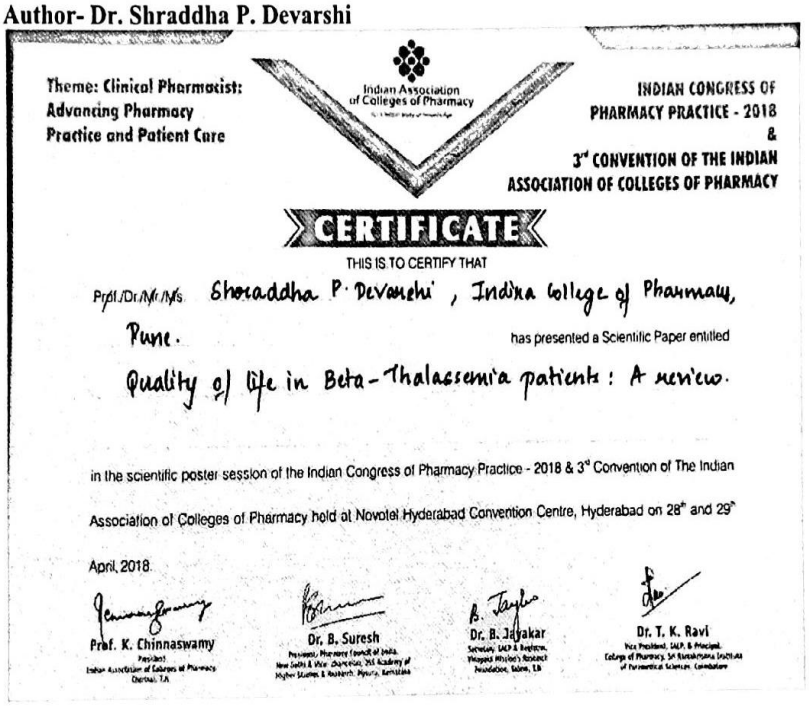
A.Y 2018-19

Author- Dr. Shraddha P. Devarshi



Theme: Clinical Pharmacist: Advancing Pharmacy Practice and Patient Care

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CERTIFICATE

THIS IS TO CERTIFY THAT

Prof./Dr./Mr./Ms. Shraddha P. Devarshi, Indira College of Pharmacy, Pune.

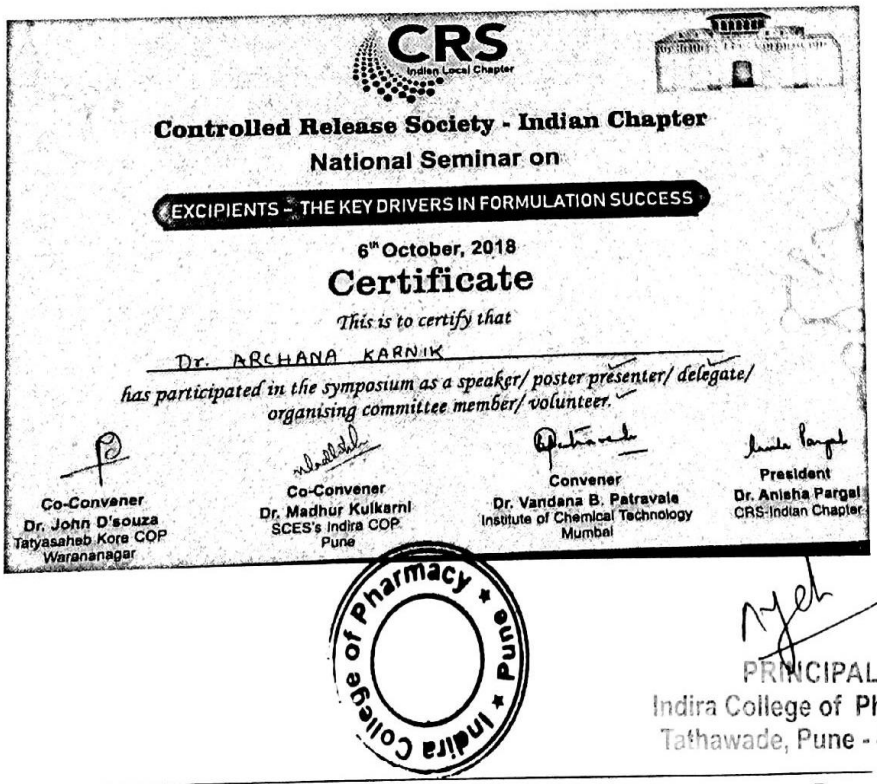
has presented a Scientific Paper entitled

Quality of life in Beta-Thalassemia patients: A review.

in the scientific poster session of the Indian Congress of Pharmacy Practice - 2018 & 3rd Convention of The Indian Association of Colleges of Pharmacy held at Novotel Hyderabad Convention Centre, Hyderabad on 28th and 29th April, 2018.

Prof. K. Chinnaswamy — Dr. B. Suresh — Dr. B. Jayakar — Dr. T. K. Ravi

Author- Dr. Archana M. Karnik



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National Seminar on

EXCIPIENTS - THE KEY DRIVERS IN FORMULATION SUCCESS

6th October, 2018

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Author- Dr.Vishakha Hastak

FORMULATION AND EVALUATION OF FAST DISSOLVING ORAL FILMS OF METOPROLOL TARTRATE

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Keywords: celecoxib, hydroxyl propyl beta cyclodextrin, fusion method, high speed homogenizer

Aim & objective: Metoprolol tartrate (meto) is commonly used as antihypertensive agent. The objective of present study is to develop fast dissolving oral films using hydrophilic polymers of Metoprolol tartrate which dissolves rapidly in mouth.

Methodology: Fast dissolving oral films of metoprolol tartrate were prepared by solvent casting method. Polymers like hydroxypropyl methylcellulose (HPMC) E15, HPMC E3, HPMC E5, polyvinyl pyrrolidone (PVP) K30, sodium algmate alone and in combination were invesugated for the film forming capacity. For the fabrication of films, glycerin was used as a plasticizer and aspartame was used as a sweetener. Drug-excipient interaction was investigated by FTIR and DSC study. Glycerin, aspartame were dissolved in a 5 ml of 50% v/v ethanol. of meto were evaluated for average weight, thickness, pH determination, percentage moisture absorption, percentage moisture loss, in-vitro disintegration time, drug content and in-vitro drug dissolution. Best formulation was evaluated for stability 40°C±2°C and 75%±5%

Results: Fast dissolving oral film formulation containing HPMC E15 as film forming polymer was considered as optimum, with 82.37± 0.75mg average weight, 0.14±0.01 mm thickness, excellent in- vitro disintegration time (49 seconds) and in-vitro cumulative percent drug dissolution more than 90 % in 15 mins, compared to other formulations. The folding endurance was 105±3.6, drug content was 97±0.9 %. It was observed that as the concentration of film forming polymers was increased, film forming capacity (up to certain limit) also

Author- Dr.Vishakha Hastak/Dr.Madhur Kulkarni

FORMULATION AND EVALUATION OF MIXTURE OF BOVINE COLOSTRUM MICROSPHERES AND PROBIOTICS FOR SUPPORTIVE TREATMENT OF ULCERATIVE COLITIS

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Aim and objective: Present study was undertaken to develop a supportive treatment for ulcerative colitis (UC) comprising mixture of bovine colostrum (BC) microspheres and probiotics.

Methodology: Characterization of BC was done by SDS-PAGE and Kjeldhal's method. Laury method was used to construct the standard plot for the BC. Probiotic strains were isolated from marketed formulations such as Yakult® and Amul® ice cream and confirmed for their probiotic nature. BC and the isolated probiotic strains individually and in combination were subjected to determination of antimicrobial activity against the pathogenic strains of Escherichia coli, Salmonella paratyphi A and B, Bacillus subtilis, Proteus spp, Candida albicans, Pseudomonas aeroginosa, Klebsiella pneumonia, Staphylococcus aureus. The isolated probiotic strain from Yakult showing petroleum ether and then dried overnight. The microspheres were evaluated for flow properties, surface morphology, entrapment efficiency, in vitro drug release (in pH 1.2, 4.5 and 7.5 buffers) and accelerated stability studies. Culture of probiotic strain isolated from Yakult was freeze dried and the resulting powder was subjected to determination of viable count. The sachet formulation was developed using the mixture of BC microspheres equivalent to 500 mg BC and 100 mg freeze dried powder of probiotic (equivalent to 5.6 X 106 CFUs)

Result and discussion: Total protein content of the BC by Kjeldhal method was found to be 44.86%. SDS PAGE studies showed the characteristic band at the 65 kDa confirming the presence immunoglobulin G. BC alone and in combination with various strains of probiotics showed significant antimicrobial activity against the selected pathogenic strains. Mixture of BC and the

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Author- Ms.Poonam Karekar

ENHANCEMENT OF STABILITY OF GINGER OIL EXTRACT BY LOADING INTO SOLID LIPID NANOPARTICLES

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Aim: To develop and characterize ginger extract loaded solid lipid nanoparticles (SLN) for enhancement of its stability.

Objectives:

1. To develop solid lipid nanoparticles (SLNs) of ginger oil.
2. To evaluate stability of the SLNs at accelerated conditions of temperature and humidity and also to evaluate the photo stability
3. To evaluate the antimicrobial potential of developed SLNs.

Methodology: Ginger oil loaded SLNs were prepared in four different batches (F1, F2, F3 and F4) by w/o/w type double emulsification method using cholesterol, polyvinyl alcohol (PVA) and different concentrations of egg albumin and Tween

months and Photo stability was performed by exposing the formulation to UV/fluorescence lamp for 6months.

Result and Discussion: The encapsulation efficiency of various batches of ginger oil loaded SLNs was in the range of 79.75 to 90.24%. The size ranges varied between 50 nm to 1000 nm. Zeta potential of all formulations was found to be negative, in the range of -44.52 to -49.37 mV. The F4 batch showing high entrapment efficiency and smaller size 182 nm was selected for further studies. FTIR spectra suggested that there were no significant structural changes or complexation reactions between drug and excipients. TEM image of SLNs showed the spherical shape with smooth surface and were observed in the size range of 100-200 nm. In vitro drug release study exhibited 95%

Author- Dr.Amir Saikh

SOLUBILITY ENHANCEMENT OF POORLY WATER SOLUBLE DRUG BY SOLID DISPERSION

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Aim: The aim of present study was to enhancing the solubility of poorly water soluble celecoxib drug.

Objective: To increase the solubility of drug. Development of solid dispersion by using fusion method and high speed homogenizer method.

Introduction: Solubility is one of the important role in the formulations like parenteral. Celecoxib is the NSAID which exhibit antipyretic and analgesic activity by inhibit prostaglandin synthesis. It acts by blocking the synthesis of inflammatory prostonoids via COX-2 inhibition, celecoxib is poorly soluble in water and low dissolution rate so there is insufficient bioavailability, it is necessary to improve solubility of celecoxib. The study explores the solubility enhancement of celecoxib by using fusion method and high speed

solid dispersion crushed and kept in vacuum desiccators. In high speed homogenizer method, the required amount of CLX and HP-β-CD dissolved in methanol and mixed properly using homogenized by 10,000 rpm for 5 min the solvent removed at 60°C. Then dried mass pass through sieve #44 mesh size and stored in vacuum desiccators over anhydrous calcium chloride until used for studies.

Result: Solubility was increased by fusion method and high speed homogenizer method by complexation of HP-β CD, maximum solubility was found to be 90.7 ± 1.2%, and DSC analysis of Celecoxib showed single endothermic event of fusion in temperature range 160.79-164.64°C. Increase in solubility observed due to the formation of 1:1 inclusion complex.

Conclusion: Using both fusion method and

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Author- Dr.Vishakha Hastak/Dr.Madhur Kulkarni

DEVELOPMENT AND EVALUATION OF ANTIMICROBIAL PATCH CONTAINING MIXTURE OF TRIDAX PROCUMBENS AND NYCTANTHES ARBORTRISTIS LEAVES EXTRACT

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Aim & objective: The purpose of this work was to develop antimicrobial patch containing mixture of aqueous extract of Tridax procumbens and Nyctanthes arbortristis leaves.

Methodology: Anti-microbial activity of aqueous & ethanolic extracts of leaves of Tridax procumbens and Nyctanthes arbor-tristis was checked against Escherichia coli (NCIM 2065), Staphylococcus aureus (NCIM 2079 and Methicillin resistant S. aureus (MRSA) (ATCC 43300) by well diffusion method. Qualitative and quantitative phytochemical evaluation of extract was performed. This was followed by checking anti-microbial activity of mixture of both the extract in 1:1 ratio. Topical antimicrobial patches containing 0.1 ml mixture of aqueous extracts of leaves of Tridax procumbens and Nyctanthes arbor-tristis was prepared by solvent casting method using hydroxypropyl methylcellulose (HPMC) K100 LV: polyvinyl pyrrolidone (PVP) K30 polymers in ratio 1:1. The prepared patch was evaluated for physicochemical content, moisture loss, and in vitro flavonoid release studies. The antimicrobial activity of patch was tested against E. coli, S. aureus & MRSA. The formulation was packed in aluminium foil sachets and subjected to accelerated stability studies at 40 ± 2°C and 75 ± 5 % RH.

Result & Discussion: Aqueous extracts of both the leaves showed good antimicrobial activity (table no. 1) against selected microorganisms, which was compared against standard. There was significant difference (*p≤0.05) between antimicrobial activity of ethanolic and aqueous extracts for both T. procumbens and N. arbortristis, against the selected strains. Significant synergistic activity was observed for the mixture of extracts as compared to either extract alone. The developed patch had folding endurance of 308±2.3, 0.28±0.003mm thickness, 91.94±0.85% of flavonoid content, 87.45% flavonoid release at the end of 6 hrs. The patch exhibited similar antimicrobial activity as the mixture of extracts. Stability studies indicated satisfactory physical and

Author- Dr..Madhur Kulkarni

DEVELOPMENT AND EVALUATION OF TASTE MASKED DRY SYRUP FORMULATION OF POTASSIUM CHLORIDE (KCL)

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Aim: The aim of the present study was to develop and evaluate taste masked dry syrup formulation of KCl.

Objectives –

1. Coating of KCl with Eudragit E 100, a pH sensitive amino alkyl methacrylate copolymer by means of fluid bed process
2. Development of dry syrup formulation of coated KCl
3. Comparison of developed formulation with marketed syrup for *in vitro* dissolution parameters and taste masking aspect.

Methodology: Fluid bed coating of KCl was performed using 4, 6, 10 and 15% coating solutions of Eudragit E100. Process parameters like spray rate, inlet air temperature, bed temperature and atomizing air pressure were optimized. The 4 lots of drug coated using solutions containing 4%, 6%, 10% and15% of

Reconstituted formulation was subjected to organoleptic evaluation, redispersibility, sedimentation volume, assay and *in vitro* dissolution in both 0.1N HCl and 6.8 phosphate buffer on day 1, 2,3 and 7 of reconstitution. The developed formulation and the marketed syrup formulation were compared for their dissolution behavior and the palatability aspect using electronic taste sensing machine. Optimized formulation was filled in clear glass bottles, capped and subjected to accelerated conditions of 40±2 °C and 75% ±5% RH.

Results: Coating with 10% polymer solution (composition C3) enabled optimal fluid bed processing, higher entrapment of the KCl (81%) and better *in vitro* release profiles in 0.1N HCl and pH 6.8 phosphate buffer. Whereas, coating with higher concentration of polymer resulted in sticking and agglomeration of particles. *In*

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SOLUBILITY ENHANCEMENT OF CELECOXIB USING DIFFERENT SOLUBILIZATION APPROACHES

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Aim: The aim of the present study was to enhance the solubility of celecoxib (CLX).

Objectives: Drug authentication and characterization by UV, DSC, XRD, FTIR; Increase in solubility of drug; Development of solid dispersion by using solvent evaporation and kneading methods.

Introduction: Solubility plays important role in various dosage form. CLX is NSAID exhibiting anti- inflammatory activity by inhibiting Cyclooxygenase-II, enzyme responsible for prostaglandin synthesis. CLX has very poor water solubility and thereby has lesser or insufficient bioavailability. Hence it is rational to improve solubility of CLX.

Methodology: Physical mixture was prepared by homogenous blending CLX and under vacuum until the solid dispersion was dry. The dried mass was pulverized, passed through 44 # sieve and stored in a desiccator over anhydrous CaCl2 until used for further studies.

Results: Solubility was increased by solvent evaporation method and kneading method by complexation of HP- β-CD, maximum solubility of CLX was found to be 94.74±0.7%. DSC analysis of CLX showed single endothermic event of fusion in temp range 160.79-164.64°C. Increase in solubility observed was due to formation of 1:5 inclusion complex.

Conclusion: Using both kneading method and solvent evaporation methods, solubility of given drug in water could be improved, significantly. Solvent evaporation method showed faster dissolution rate than kneading method, it can be concluded that

AY 2019-2020

Author- Dr..Madhur Kulkarni

IVRT OF ACYCLOVIR SEMISOLID FORMULATIONS USING IMMERSION CELLS: STUDY OF EFFECT OF TEST AND FORMULATION VARIABLES

Kulkarni M., Potdar S., Syed N., Marfatiya A.
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Keywords: Acyclovir, Immersion Cells, IVRT, semisolids

Aim: The aim of the present work was to study the impact of test and formulation variableson in vitro release of acyclovir from its semisolid formulations employing Immersion Cells.

Objectives- 1. Study of variables like membrane, stirring rate, media volume, temperature, and size of Immersion cells on in vitro release of acyclovir from the innovator cream formulation2. Study of impact of formulation variables such as solvent concentration, method of preparation, consistency, cosolvent concentration on in vitro release of acyclovir 3. Comparison of acyclovir release from various marketed formulations using the optimized IVRT method

Methodology: Immersion Cells ™ type A were used for optimizing IVRT method of acyclovir topical formulations. The USP Apparatus Type 2 (Electrolab EDT 08Ix) equipped with flat bottom 200 ml capacity flasks and mini spin paddleswas used in the study. Alkaline borate buffer pH 9.2 was chosen as a receptor fluid. Effect of following variables was assessed on the release of acyclovir from its marketed cream formulation (Acivir®- Cipla). Membrane type - Durapore™/Nitrocellulose/ Huropore™; Media volume- 150 mL/200 mL, Media temperature - 32° C/ 37° C, Paddle speed - 50/100/150 RPM, Immersion cell size- 0.5/2/4 cm². Different formulations prepared with changes in the compositions were F1 with same formula as marketed one (Acivir-Cipla), F2 with the same formula but without the homogenization step, F3 without the use of solvent (Propylene glycol), F4- with higher solvent conc., F5-with altered composition of oil phase, F6 & F7- with polyethylene glycol 200 & 4000 respectively as solvents instead of propylene glycol. All the formulations were subjected to IVRT using Nitrocellulose membrane, 200 mL of the borate buffer maintained at 32° C and agitated at the rpm of 150. The cream was loaded in the immersion cell of 2 cm² and the study was performed for 6 h duration with withdrawal of 5 mL aliquots at 0.25, 0.5, 1, 2, 4 and 6 h intervals. Equal volume of the fresh receptor fluid was replaced at every sampling interval. The in vitro drug release rate was computed. Various marketed formulations of acyclovir were subjected to the IVRT using the method mentioned above. The release rates were compared statistically by one-way ANOVA at $p \leq 0.05$ using Graphpad prism software (version)

Results: Nitrocellulose membrane showed greater release of the drug compared to Durapore and Hurop... With the increase in the agitation speed from 50 to 100 to 150, the amount of acyclovir release increased linearly. Temperature of the receptor fluid had a significant impact on the release of the drug with higher temperature showing greater release. Media volume of 150 mL showed greater release per mL as compared to 200 mL owing to lesser dilution. As the cell size increased, the drug release also increased proportionately. The media volume of 200 mL at 32°C with 150 rpm paddle speed and cell size of 2 cm² employing Nitrocellulose membrane was considered as the optimum method for further studies.

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P 124

CHRONOMODULATED DELIVERY SYSTEM OF METOCLOPRAMIDE HYDROCHLORIDE: AN EFFECTIVE THERAPY FOR GASTRIC PARESIS AND MORNING SICKNESS

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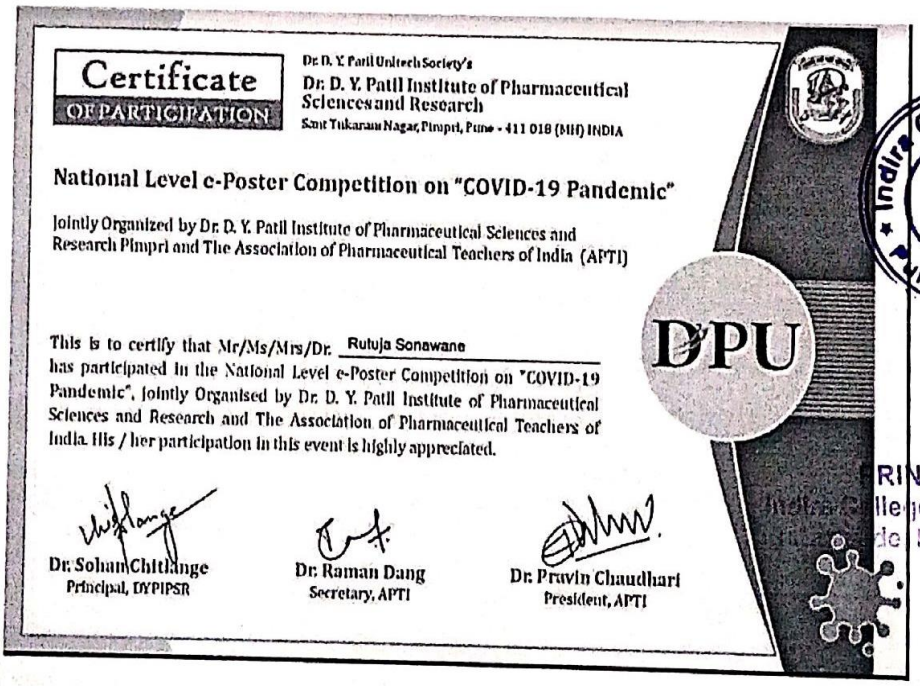
Keywords: chronomodulated delivery, metoclopramide hydrochloride, gastric paresis, morning sickness, optimization

Aim: The aim of the study was to develop and evaluate chronomodulated delivery system of metoclopramide hydrochloride which could be used to combat early morning gastroesophageal reflux in pregnant women and prevent the symptoms of gastroparesis in diabetic patients.

Objectives: The objective of the current study were 1) Development of chronomodulated tablet formulation of metoclopramide hydrochloride using compression coating technique 2) Formulation optimization using design of experiments (DoE) approach. 4) Evaluation of the optimized formulation by in vivo studies.

Methodology: Core tablets of metoclopramide hydrochloride comprising lactose, microcrystalline cellulose, crospovidone were prepared using direct compression technique. The resulting tablets were subjected to evaluation of assay, content uniformity, disintegration time, in vitro drug release. Glyceryl dibehenate and hydrogenated castor oil, both chemically inert and highly compatible lipids were used in combination with dicalcium phosphate for the preparation of compression coating layer. The levels of glyceryl dibehenate, hydrogenated castor oil and dicalcium phosphate were optimized statistically using face centered cubic design to achieve the desired *in-vitro* drug release profile. Design Expert software 8.05 (Stat- Ease Inc., Minneapolis, MN, USA) was used for this purpose. Each factor was studied at 3 different levels (-1, 0 and +1). The targets set for response variables were NMT 10% drug release in 4 h, NLT 50% drug release in 4.5 h and NLT 85% release in 5 h. The formulation was prepared using the optimized formula suggested by the software and analyzed for the response parameters. The closeness of the actual response was compared with the theoretical response suggested by the software. The tablets were prepared in larger bulk as per the optimized formula and subjected to hardness, thickness, disintegration time and *in-vitro* release studies over the physiological pH range and stability studies. In vivo pharmacokinetic studies were performed for the formulation in the fasting as well as fed state in 12 healthy human volunteers. Reglan® tablets (10 mg strength) were used as the reference product. The parameters such as Cmax, Tmax and AUC were computed from log plasma drug concentration time profiles and subjected to determination of bioequivalence.

Author- Mrs.Rutuja Kamble



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Dr. Soham Chitlange, Principal, DYPIPSR
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Dr. Pravin Chaudhari, President, APTI

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Author- Dr. Madhur Kulkarni/ Ms. Roopal Bhat

P-043

EFFECT OF BORNOEL ON PERMEABILITY OF A BCS CLASS III DRUG IN SELF NANOEMULSIFYING DELIVERY SYSTEM.

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Keywords: SNEDDS, acyclovir, borneol, ex vivo permeation, P-gp substrate

Aim: To evaluate the effect of borneol on permeability of a BCS class III drug in self nanoemulsifying delivery system.

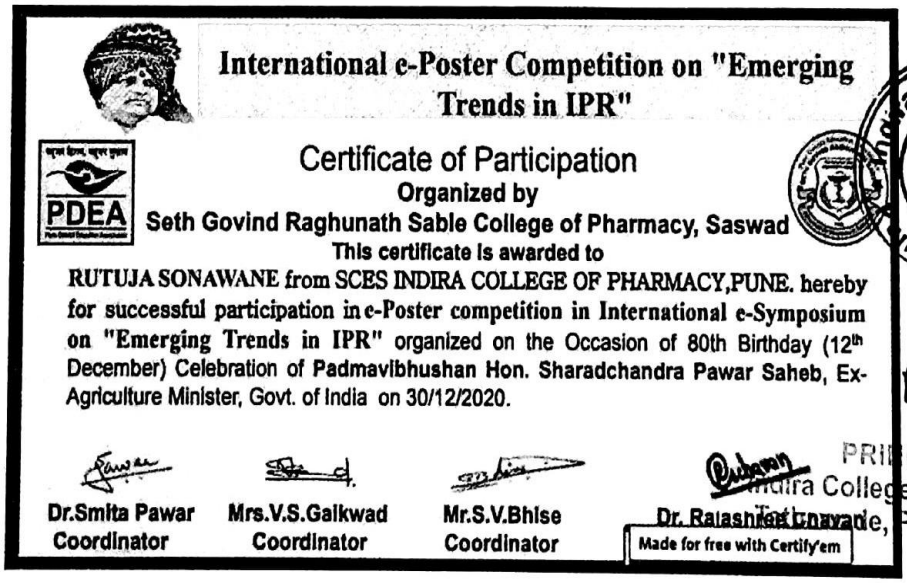
Objectives: 1.Development of SNEDDS of acyclovir alone and in conjunction with borneol (BO).
2. Ex-vivo permeability studies of acyclovir SNEDDS in presence and absence of borneol using goat and chicken ileum.

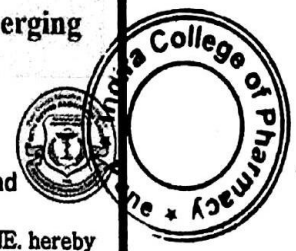
Methodology: SNEDDS were formulated by mixing of Captex 300® (oil), Cremophor RH 40 (a non-ionic surfactant) and Capmul® MCM (co-surfactant) in a vial followed by bath sonicating the mixture for 10mm. BO was incorporated into the SNEDDS formulation in various concentrations and resulting formulations were named as BO3 (containing 300 mg of BO in 2.5g of SNEDDS), BO6 (600 mg in 2.5g of SNEDDS) and BO8 (800 mg in 2.5g of SNEDDS). HPLC method was developed for analyzing acyclovir during *ex vivo* permeation studies. The *ex vivo* permeability studies were performed by non-everted gut sac technique using goat and chicken ileum. The method was validated for a low permeation model drug, amoxicillin trihydrate and the studies were conducted on USP type II apparatus with 300mL of the tyrode solution maintained at 37°C. RPM was set to 25 and aeration was maintained at 1bubble/sec. *Ex vivo* permeation of pure drug, drug incorporated in SNEDDS formulation and the drug incorporated in BO3, BO6 and BO8 formulations were compared.

Results and discussions: The *ex vivo* permeation of the model drug at the end of 3 hours was found to be 17% and 1.65% from goat and chicken ileum respectively. This low permeation indicated the established method is suitable for low permeation drug. The permeation results as shown in table indicates that SNEDDS in absence of BO was unable to enhance the permeation of acyclovir when compared with neat acyclovir solution whereas formulations BO6 and BO8 containing BO showed better drug permeation in both goat and chicken ileum models. Better drug permeation in goat model as compared to chicken model could be attributed to the greater diameter of goat ileum and thinner wall unlike chicken ileum. This indicated that different animal models show substantial difference in permeability and resulting bioavailability. % Permeation at the end of 3 hours

Goat Ileum	Acv solution	Acv in SNEDDS	Acv in borneol
BO3 formulation	45.25± 0.63	38± 0.43	35± 5.56
BO6 formulation	20.15± 0.089	13.02± 1.37	29.03± 4.30

Author- Mrs. Rutuja Kamble





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Author- Dr. Madhur Kulkarni

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TO COMPARE QUALITY OF GRANULES OF IBUPROFEN OBTAINED FROM SUPER GRAN™ AND RAPID MIXER GRANULATOR

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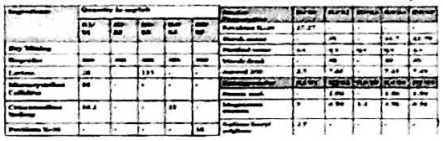
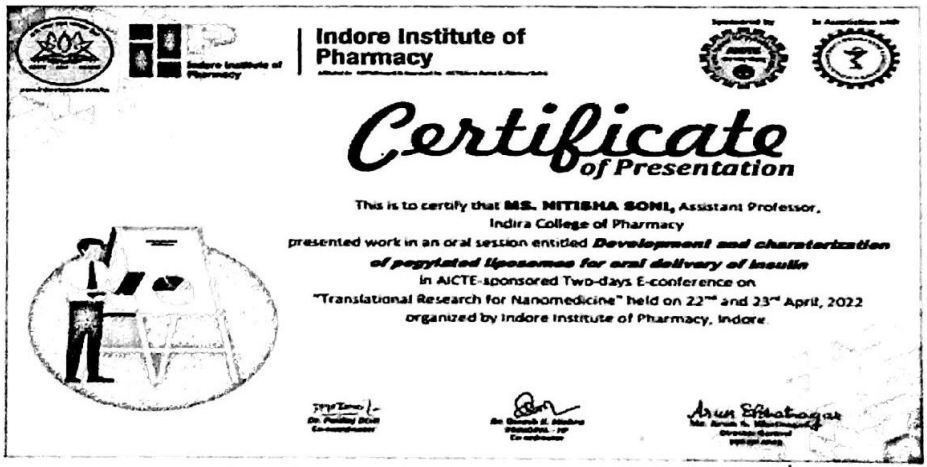
Keywords: Ibuprofen, Super Gran ™, Rapid Mixer Granulator

Introduction: Super Gran™ is a mixer cum granulator developed and patented by Gansons Ltd which is characterised by presence of multiple stacked impellor blades and two scrappers. The special design of the granulator is expected to enhance the speed of dry mixing, wet granulation and wet milling compared to rapid mixer granulator. This technology is expected to enhance the uniformity of granulation.
Aim: The aim of the present study was to compare quality of granules of ibuprofen (ibu) prepared in Super Gran™ and rapid mixer granulator (rmg).
Objectives: 1.To prepare ibu granules using various diluents and granulating agents in Super Gran ™ and rmg 2. To compare the granules obtained from both the granulators 3. To compare tableting characteristics of both the granules **Methodology:** Ibu granules were prepared by wet granulation technique using various trial compositions.(Table 1)For each composition, dry mixing and wet granulation were carried out in rmg (Bectochem)and Super Gran™. The resulting granules were compared for flow properties, proportion of fines and morphology. The granules were compressed into tablets using 12mm s/c circular plain punches (Rimek, Karnavati). The tablets were evaluated for appearance, weight variation, hardness, friability, disintegration time. *In vitro* release profiles (conducted as per USP monograph) were compared using Student's *t* test. 2^2 Full Factorial design was used for optimization trials of ibu tablets in both SuperGran™ and rmg. Independent variables chosen were concentration of binders (maize starch and PVP K-30). The response variables were disintegration time (<3 mins) and *in vitro* release (not less than 80% within 60 mins). Total 7 trial runs (A1-A7 and S1-S7) suggested by Design Expert Software® (Version 11) were processed in both the granulators. granules were compressed and the tablets were evaluated for all the earlier mentioned parameters.



Author- Ms.Nitisha Soni



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This is to certify that **MS. NITISHA SONI,** Assistant Professor, Indira College of Pharmacy presented work in an oral session entitled ***Development and characterization of pegylated liposomes for oral delivery of insulin*** in AICTE-sponsored Two-days E-conference on "Translational Research for Nanomedicine" held on 22nd and 23rd April, 2022 organized by Indore Institute of Pharmacy, Indore.

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Saranjit Singh, Scientific Chair - DRPI 2021
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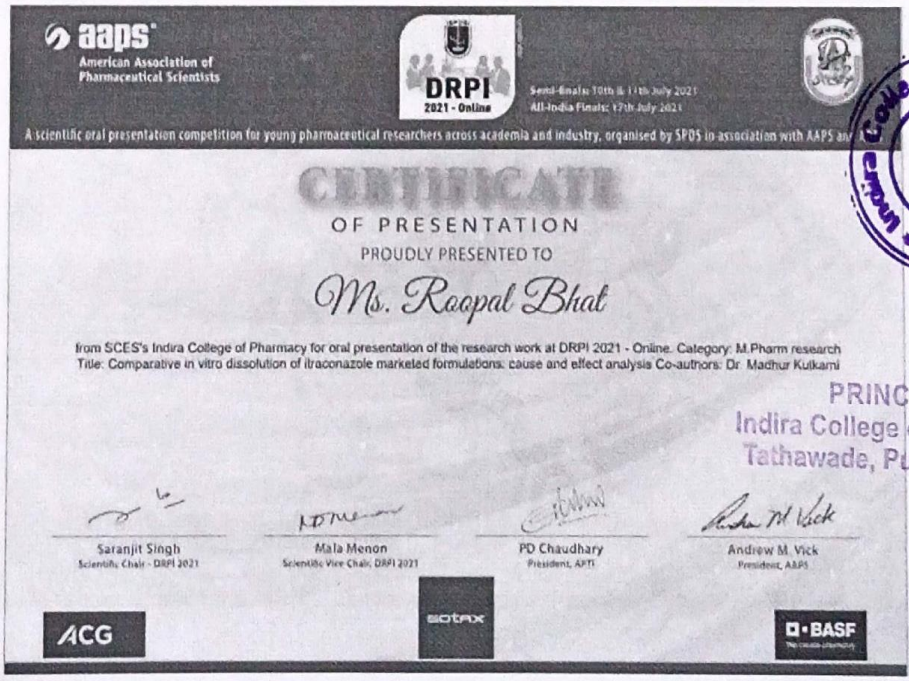

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Saranjit Singh, Scientific Chair - DRPI 2021
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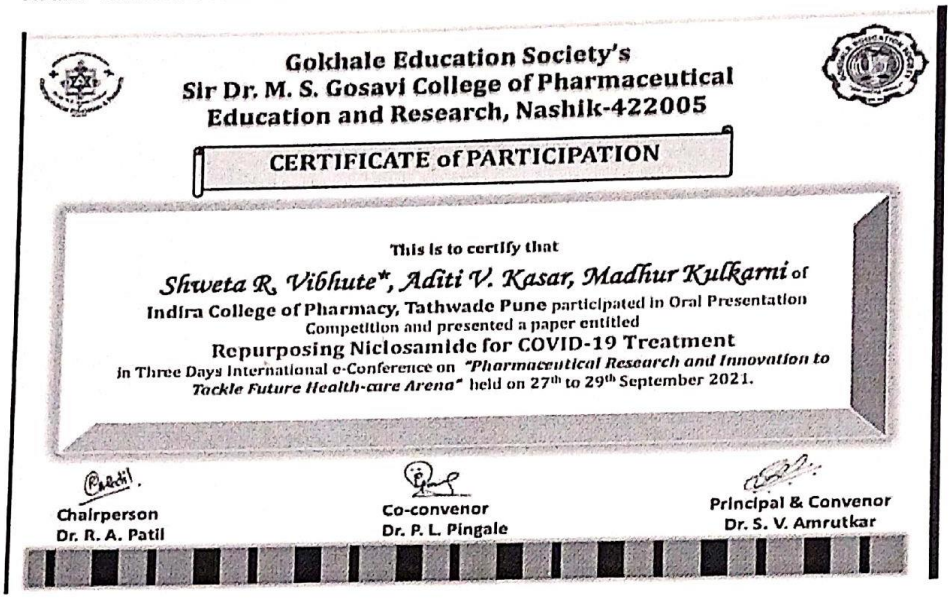

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Repurposing Niclosamide for COVID-19 Treatment

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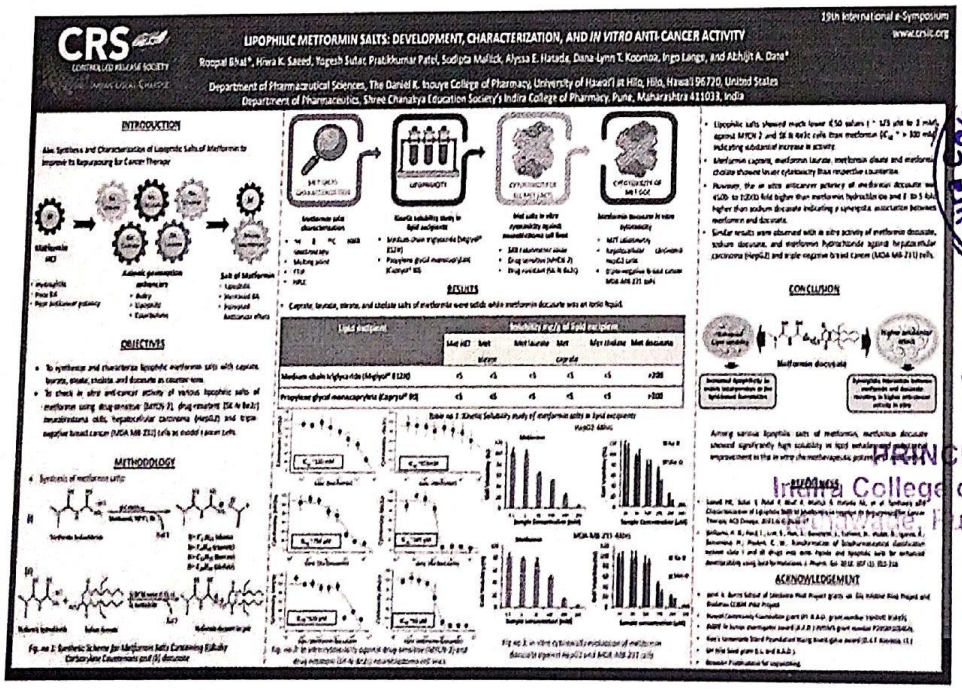

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LIPOPHILIC METFORMIN SALTS: DEVELOPMENT, CHARACTERIZATION, AND *IN VITRO* ANTI-CANCER ACTIVITY

Roopal Bhat*, Hiwa K. Saeed, Yogesh Sutar, Pratikkumar Patel, Sudipta Mallick, Alyssa E. Hatada, Dana-lynn T. Koontoa, Ingo Lange, and Abhijit A. Date*

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ACKNOWLEDGEMENT

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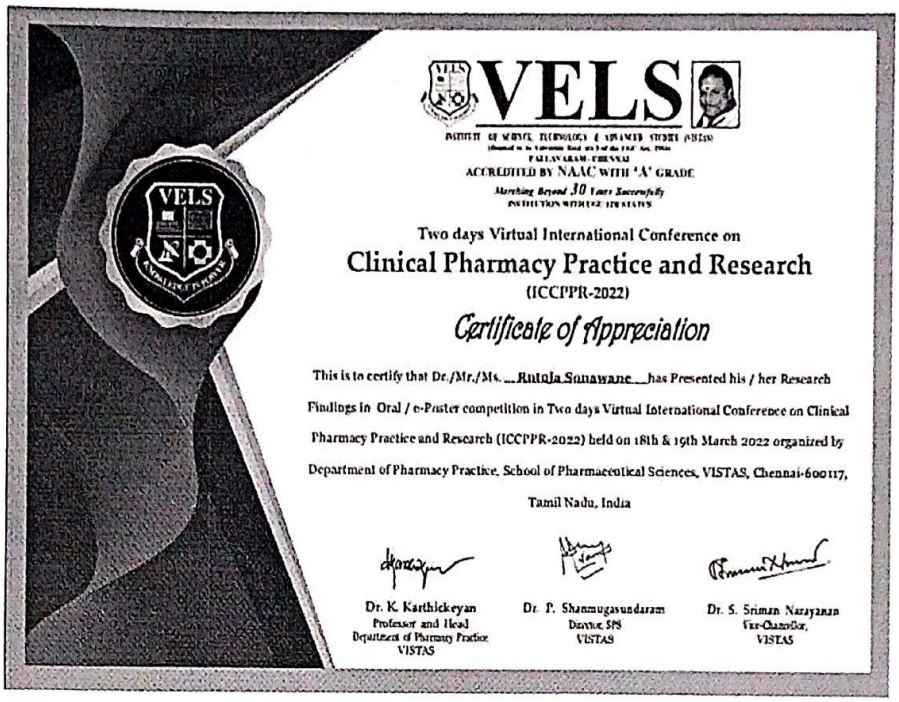

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Dr. K. Karthickeyan, Professor and Head, Department of Pharmacy Practice, VISTAS

Dr. P. Shanmugasundaram, Director, SPS, VISTAS

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