26TH ANNUAL NATIONAL CONVENTION

PSIT Kanpur

APTICON 2023

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PSIT-PRANVEER SINGH INSTITUTE OF TECHNOLOGY (PHARMACY), KANPUR

CERTIFICATE

OF APPRECIATION

This is to certify that

Prof./Dr./Mr./Ms. RITUPARNA CHAKI

From Dr. B. C. Roy College of Pharmacy & AHS, Durgapur

has presented a **POSTER** on the topic entitled Formulation & evaluation of Chitosan-based quercetin dihydrate nanoparticles for ocular drug delivery

in the 26th **Annual National Convention** of the **Association of Pharmaceutical Teachers of India -2023** held at **PSIT- Pranveer Singh Institute of Technology (Pharmacy), Kanpur (India)** from 2nd to 3rd September 2023.

Prof. (Dr.) Samir Kumar Samanta
M. Pharm., Ph.D (J.U.)
Principal
Dr. B. C. Roy College of Pharmacy & AHS
Durgapur, West Bengal-713206

Dr. B. C. Roy College of Pharmacy & AHS Durgapur

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Rituparna Chaki Ghosh <rituparna.chaki@gmail.com>

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26TH ANNUAL CONVENTION APTICON KANPUR 2023

Dear Rituparna Chaki,

Greetings from PSIT-Pranveer Singh Institute of Technology (Pharmacy), Kanpur

Thank you for submitting your abstract **Code:**PSIT/PP01/0143

Title: Formulation & evaluation of Chitosan- based Quercetin dihydrate nanoparticles for ocular drug delivery

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Thanks, and regards
26th APTICON 2023
Scientific Committee

2 attachments

Poster Guidelines.pdf
103K

Dr. B. C. Roy College of Pharmacy & AHS Durgapur

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M. Pharm., Ph.D (J.U.)
Principal
Dr. B. C. Roy College of Pharmacy & AHS
Durgapur, West Bengal-713206

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Dr. B. C. Roy College of Pharmacy & AHS * Durgapur

Prof. (Dr.) Samir Kumar Samanta
M. Pharm., Ph.D (J.U.)
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Dr. B. C. Roy College of Pharmacy & AHS
Durgapur, West Bengal-713206

2nd–3rd September 2023

quercetin from the optimized formulation in 6 h compared to 18.37±2.7% of pure drug.

Summary & Conclusion: The outcome of the current study indicated that quercetin nanomicelles formulation with improved stability could serve as a promising approach for enhancing its overall bioavailability for its multifarious clinical use.

Keywords: *Quercetin, Nanomicelles, Solvent evaporation method, Solubility, Permeation.*

PSIT/PP01/0142

Development and characterization of *Boswellia serrata* nanostructure gel

Jitendra Hiwarkar*, Prajakta Dhokale, Rakesh Mishra, Tanaji Nandgude
Department of Pharmaceutics
Dr. D. Y. Patil Institute of Pharmaceutical Sciences and Research, Pimpri, Pune.
*Presenting Author:
jitphiwarkar111@gmail.com

Introduction: Boswellia Serrata that possesses potential therapeutic effect against psoriasis has poor bioavailability limiting its clinical application.

Aim & Objectives: The goal of the current study was to explore the potential benefits of Boswellia Serrata nanostructure gel as a prospective antipsoriatic topical delivery system counteracting the drug challenges in terms of its extremely low aqueous solubility, instability, skin irritation, and systemic adverse effects.

Methods: Nanostructures were prepared using emulsification method using Glycerol Mono as a carrier and Gelucire 44/14 as stabilizer. Optimization was performed using 3^2 factorial design. Optimized Boswellia Serrata-loaded nanostructures were characterized by FTIR, TEM; DSC, *in-vitro* drug release study.

Results: Optimization studies showed that the % Gelucire 44/14 and Stirring speed had significant effect on particle size and % entrapment efficiency. Particle size of BS-NS was found to be 180.9±2.01 nm with an entrapment efficiency of 95.8% ± 0.43. FTIR studies revealed compatibility of Boswellia serrata with the excipient. DSC thermograms indicated molecular dispersion of Boswellia Serrata in Gelucire 44/14 due to the solubilization of drug. Gel of the BS-NS was formulated using Carbopol 934 as gelling agent its significant effect was observed for the treatment of psoriasis in *in-vivo* mouse tail method. The designed system showed nearly 2- fold enhancement in drug release of Boswellia Serrata nanostructures gel as compared to Boswellia Serrata gel.

Summary & Conclusion: The developed system can be utilized in design and development of drugs having poor bioavailability due to limited solubility and permeability and also its topical use in psoriasis can be explored.

Keywords: *Nanostructures, Boswellia Serrata, GMO, psoriasis, entrapment efficiency*

PSIT/PP01/0143

Formulation & evaluation of Chitosan- based quercetin dihydrate nanoparticles for ocular drug delivery

Rituparna Chaki*[1], Ankita Banerjee[1], Biswarup Ghosh[1], Priyanka Chakraborty[1], Subhash C Mandal[2]
[1]*Dr. B.C.Roy College of Pharmacy and AHS, Bidhannagar, Durgapur, 713206, India.*
[2]*Pharmacognosy and Phytotherapy Research Laboratory, Division of Pharmacognosy, Department Of Pharmaceutical Technology, Jadavpur University, Kolkata, 700032, India.*
* Presenting Author:
rituparna.chaki@gmail.com

Introduction: Quercetin is a natural flavonoid found in many fruits, vegetables, leaves, and grains and has received

Prof. (Dr.) Samir Kumar Samanta
M. Pharm., Ph.D (J.U.)
Principal
Dr. B. C. Roy College of Pharmacy & AHS
Durgapur, West Bengal-713206

Dr. B. C. Roy College of Pharmacy & AHS Durgapur

significant attention from researchers owing to its anticancer, anti-inflammation, and antioxidant effects. Quercetin reduces oxidative stress associated with eye complications and prevents intraocular inflammation through its anti-inflammatory potential.

Aim &Objectives: Quercetin is reported to have poor aqueous solubility and permeability which is a hindrance to ocular dosage- development. Chitosan with its biocompatibility and biodegradable nature is a promising component to prepare nanoparticles. The aim of the present work was to design and characterize chitosan-based quercetin dihydrate nanoparticles to improve transcorneal permeation into the eye.

Method: Quercetin was loaded into nanocarriers with the help of chitosan by ionotropic gelation method. These were characterized for size, morphology, drug encapsulation and release studies. To avoid unethical irritancy test on rabbits, ocular irritancy test was performed through HET-CAM test. The permeability test was carried out using excised goat's cornea.

Result: Results suggested that quercetin easily permeated across excised goat's cornea showing no irritancy in the HET-CAM test. SEM indicated formation of spherical nanocarriers with good stability. The particle size of the prepared nanocarriers was found to be 116.2 nm with a drug loading efficiency of around 70-80%.

Summary & Conclusion: Quercetin loaded chitosan based nanoparticles offers controlled release characteristics confirmed with drug release and permeation pattern of the drug with no ocular irritancy, thus suggesting significant opportunity in the development of ocular dosage form.

Keywords: *Quercetin, chitosan, ocular, nanoparticles, HET-CAM, transcorneal.*

PSIT/PP01/0147

Development and evaluation of transdermal organogels containing nicorandil

Dr. Arun Kumar Patel, Dr. Naveen Shivavedi, Mr. Vijay Pratap Ahirwar

Shri Ram Group of Institutions, Faculty of Pharmacy, Jabalpur- 482 002, M.P.

*Presenting Author:

arun.patelnsp@gmail.com

Introduction: Transdermal drug delivery systems have offered several clinical advantages in drug delivery since their inception more than 20 years ago, and have been gaining momentum in the past decade due to their ability to provide controlled release of molecules, avoidance of first pass metabolism, reduced side effects and increased patient compliance. Transdermal gels/organogels of antianginal and antihypertensive category are very useful as palliative product for treating pain and inflammation associated with atheroma and hypertension.

Aim & Objectives: To perform the development and evaluation of Transdermal Organogels containing Nicorandil.

Method: The prepation of Nicorandil was done in mixture ethanol containing methyl paraben, propyl paraben and lecithin. Evaluation was also performed for the same organogels such as pH measurement, viscosity, spreadability, drug content, in-vitro diffusion study, forced degradation study, etc.

Result: Transdermal preparations of Nicorandil were successfully prepared.

Summary & Conclusion: Based on in-vitro diffusion studies it was concluded that the Nicorandil organogels with a lower concentration of penetration enhancer showed better penetration as compared to the gels.

Keywords: *Organogels, In-vitro diffusion studies, Inflammation, Atheroma, Viscosity.*

Prof. (Dr.) Samir Kumar Samanta
M. Pharm., Ph.D (J.U.)
Principal
Dr. B. C. Roy College of Pharmacy & AHS
Durgapur, West Bengal-713206

Dr. B. C. Roy College of Pharmacy & AHS * Durgapur