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SUMMARY SHEET

Criteria 3	QlM	3.3.1.	2017-18 To 2021-22
Title		Number of research papers published per teacher in the Journals notified on UGC care list during the last five years	

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

The following enclosed data contains details of papers published by teachers during the last five years

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JOURNAL OF LIPOSOME RESEARCH
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REVIEW ARTICLE

Comprehensive review on use of phospholipid based vesicles for phytoactive delivery

Manish Kumar Gupta[a], Vipul Sansare[a], Birendra Shrivastava[a], Santosh Jadhav[b] and Prashant Gurav[c]

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ABSTRACT

Plant-derived phytoconstituents are well known for their therapeutic potential. It has been experimentally demonstrated that whole-plant extract or isolated phytoconstituents reveal various therapeutic potentials like hepatoprotective, antimicrobial, neuroprotective, antitumor, antioxidant, skin protectives, etc. Although these phytoconstituents have potential therapeutic benefits, their use is limited due to their poor bioavailability, stability in biological fluids, and authentication issues. These continue to be an open problem that affects the application of these valuable ancient herbal herbs in the effective treatment and management of various disease conditions. A potential solution to these difficult problems could be the loading of phytoactives in phospholipid-based vesicular systems. Phospholipid-based vesicles like liposomes, phytosomes, ethosomes as well as transfersomes were effectively utilized recently to solve drawbacks and for effective delivery of phytoactives. Several landmark studies observed better therapeutic efficacy of phytoactive loaded vesicles compared to conventional drug delivery. Thus phospholipid-based vesicles mediated phytoactive delivery is a recently developed promising and attractive strategy for better therapeutic control on disease conditions. The present short review highlights recent advances in herbal bioactive loaded phospholipid-based vesicles.

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KEYWORDS
Plant extracts; phytopharmaceuticals; herbal novel drug delivery systems; phospholipid vesicles; nanotechnology

1. Introduction

Plant extract or isolated therapeutically active phytoconstituents have long been used worldwide for the treatment of various diseases as well as accepted by physicians and patients because of their fewer side effects (Musthaba *et al.*

Nanotechnology is an interdisciplinary area of research and development associated with the production, processing, and utilization of materials having a nanometer size range (Patra *et al.* 2018). Furthermore, nanotechnology in the herbal drug domain has been investigated to improve the

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RESEARCH ARTICLE

Design and evaluation of sesamol loaded hyaluronic acid functionalized phospholipid nanovesicles: DPPH radical scavenging potential assay

Manish Kumar Gupta[1], Vipul Sansare[1*], Birendra Shrivastava[1], Santosh Jadhav[2], Prashant Gurav[3]

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Antioxidant phytoactive
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ABSTRACT

Objective(s): The unfavorable physicochemical properties of well recognized antioxidant phytoactive sesamol limits its oral bioavailability as well as potential application as an antioxidant drug. The aim of the study is to design and evaluate sesamol encapsulated hyaluronic acid anchored phospholipid nanovesicles to enhance its antioxidant potential.

Methods: Drug encapsulated hyalurosomes were prepared using thin film hydration method and evaluated for particle diameter, physical stability, drug encapsulation efficiency, sesamol release behavior in vitro and DPPH radical scavenging assay.

Results: The selected method was found to be effective for fabrication of phospholipid nanovesicles with particle diameter 200 ± 10.173 nm and zeta potential -29.8 ± 4.16 mV. The drug loaded hyalurosomes revealed significantly better radical scavenging potential compared to free sesamol and unloaded hyalurosomes.

Conclusions: Hyaluronic acid functionalized phospholipid nanovesicles is novel phospholipid based carrier for delivery of phytoactives. Thus formulated phospholipid based system could be acceptable system for delivery sesamol with improved antioxidant potential.

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Fabrication and evaluation of mannose decorated curcumin loaded nanostructured lipid carriers for hepatocyte targeting: *In vivo* hepatoprotective activity in Wistar rats

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ARTICLE INFO

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Asialoglycoprotein receptors
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ABSTRACT

Curcumin is a well-recognized antioxidant phytoactive isolated from the rhizomes of *Curcuma longa*. Numerous landmark investigations have proved the antioxidant and hepatoprotective potential of curcumin. The aim of present study was to target curcumin loaded nanocarriers to hepatocytes using asialoglycoprotein receptors targeting strategy. Mannose, a water-soluble carbohydrate, was hydrophobized by anchoring stearylamine with an objective to conjugate mannose on the surface of curcumin loaded nanostructured lipid carriers for targeting asialoglycoprotein receptors on hepatocytes. Mannose conjugated stearylamine was synthesized and characterized using various analytical techniques. The synthesized targeting ligand was incorporated curcumin loaded nanostructured lipid carriers and characterized by photon correlation spectroscopy. Zeta potential measurement was used to confirm the conjugation of the synthesized ligand to the surface of drug-loaded nanostructured lipid carriers. CCl_4 induced hepatotoxicity in male Wistar rats was used as an experimental animal model to evaluate the hepatoprotective potential of formulated drug encapsulated nanostructured lipid carriers. The hepatoprotective potential was assessed by measuring serum liver injury markers and oxidative stress parameters in the liver post-mitochondrial supernatant. Mannose conjugated nanostructured lipid carriers showed acceptable particle size which revealed its suitability for hepatocyte targeting. In addition to this, mannose conjugated nanocarriers revealed significantly better ($p < 0.05$) reduction of serum liver injury markers and proinflammatory cytokines compared to the unconjugated one which confirmed hepatocytes targeting potential of the synthesized ligand. Asialoglycoprotein receptors targeting could be a landmark strategy for hepatocyte targeting. Thus, the synthesized mannose anchored stearylamine could be a promising novel targeting ligand having hepatocyte targeting potential.

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Original Article

Investigation on *in-vitro* Dissolution and Tableting Properties Enhancement of Etodolac using Stearoyl polyoxyl-32-glycerides as Novel Solid Melt Carrier

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ABSTRACT

Objectives: The objective of present study was to improve dissolution rate with tableting properties of BCS class II drug Etodolac, by melt granulation and sublimation techniques. **Materials and Methods:** The granules of etodolac were formulated using Gelucire 50/13. The surface adsorbent Aerosil 200 was utilized. Both melt granulation and surface adsorption method in conjunction with sublimating agent were used to formulate tablets of Etodolac. Etodolac: Gelucire 50/13: Aerosil200 was used in different ratio for melt granulation technique to improve dissolution and tableting properties. **Results:** Solubility study of melt granules were carried out in different ratio. 1:2:1 ratio showed 25 fold increases in solubility of Etodolac. This 1:2:1 (A4) ratio was selected to designate the tablets along with super disintegrant and sublimating agents. Precompression and post-compression parameters results were satisfactory for etodolac tablets. XRD and DSC study showed that Etodolac crystallinity was completely disappeared in A4 melt granules. *In vitro* drug release of formulation F4 and F8 containing crosscarmallose sodium and menthol were found to be 94.64% and 98.14% drug release at the end of 24 and 20 min respectively. The dissolution statistics like MDT, %DE and DP10 for optimized formulation F8 exhibited 8.90 min, 28.25% and 55.45% respectively. **Conclusion:** The melt granulation technique is useful to improve dissolution of Etodolac ideally, along with superior tableting properties.

Key words: Etodolac, Gelucire50/13, Melt granulation, Sublimating agent, Surface adsorption, Dissolution improvement.

INTRODUCTION

The GIT region imparts sufficient fluid in the direction of making the disintegration for solid formulation furthermore dissolution. Basically massive surface vicinity of gastric mucosa positively affects the absorption of the drug. Since the oral path has sustained the utmost attractive rout for transport of drug even though the advancements made within the latest drug transport systems. Banker and Anderson confirmed that as a minimum 90% of the entire tablets preferred to supply systemic result are given by oral route. The efficiency of oral product rests on its absorption in the GIT.[1] The rate and extent of a drug rely on its solubility the rate-determining step in the onset of therapeutic activity. Consequently poorly water soluble tablets are specified via a little bioavailability as a result of a smaller amount of absorption and this is a main focus of pharmaceutical industries.[2] Nowadays, the utmost challenge in pharmaceutics is to develope oral dosage forms of Biopharmaceutical Classification System (BCS) class II or IV drugs. The abundant formulation techniques has been reported in the most recent decades to enhance the solubility moreover dissolution rate of poorly water soluble drug.[3] The methods are inclusion complexes,[4] salt formation,[5] microemulsion,[6]

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A review on metabolic syndrome

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Abstract---Metabolic syndrome is considered a major reason for the emergence of chronic dreadful diseases. Obesity and wrong food habit are key factors for metabolic syndrome. Globally people are affected by glucose intolerance, central obesity, hypertension, and dyslipidemia. Diabetes is a major part of metabolic syndrome. Targeted anti-inflammatory therapy has been suggested for both prevention and treatment of many of the above-said syndrome especially diabetes. Diet is an important regulatory factor in the immune response. There is considerable evidence to suggest that malnutrition leads to immune suppression due to a susceptibility to infection. On the other hand, over-nutrition leads to immune activation due to a susceptibility to an inflammatory condition. Inflammation may have an important role in the development and progression of diabetes and its complications; however, the impact of experimental anti-inflammatory treatments on diabetes deterioration over time and cardiovascular outcomes is still elusive. Thus proper diet with some drug therapy not only resolves the issue but can prevent the progression of the disease at extreme levels.

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Synthesis, Characterization and Biological Evaluation of Indole-Pyrazole Amalgamated α-Cyano Substituted Chalcones

Authors: Bhale, Pravin S.; Shringare, Sadanand N.; Khade, Amol B.; Chavan, Hemant V.
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Abstract | References | Citations | Supplementary Data

Background: Indole and pyrazole constitute a major class of biologically active scaffolds. The amalgamation of two or more pharmacophores would generate novel molecular templates that are likely to unveil remarkable biological properties.

Objective: An efficient and high yielding synthesis of indole-pyrazole integrated α-cyano substituted chalcones and their in vitro anti-breast cancer and antioxidant evaluation.

Methods: The synthesis of a series of indole-pyrazole amalgamated α-cyano substituted chalcones (6a-o) was achieved by reacting substituted 3-cyanoacetyl indole 2 with substituted pyrazole aldehyde 5 in the presence of piperidine. All the newly synthesized compounds have been characterized by IR, ^{1}H NMR and HRMS spectroscopy.

Results: Anti-breast cancer evaluation of the synthesized compounds in vitro against MCF-7 cell line revealed high anti-breast cancer activities. Amongst the compounds screened 6f, 6g, 6h, 6c, 6d, 6e, 6i and 6k unveiled excellent activity against breast carcinoma (GI_{50} <0.1μM) as good as adriamycin (GI_{50} <0.1μM). The compounds were also screened against the normal Vero monkey cell line and the results demonstrated more selectivity against MCF-7. On the other hand, compounds 6b, 6c, 6d, 6h and 6i have shown moderate DPPH and NO radical scavenging activity.

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Original Article

Isoxsuprine Hydrochloride Loaded Cellulose Acetate Phthalate Microsponge Drug Delivery System: Design and Evaluation

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ABSTRACT

Aim: The present study was aimed to Design and evaluation of microsponge based drug delivery system of Isoxsuprine Hydrochloride. The microsponge drug delivery system is designed for site specific and controlled release of drug by using cellulose acetate phthalate to improve the site-specific absorption of drug. **Materials and Methods:** The microsponges was formulated by modified quasi emulsion solvent diffusion technique. The chemical interaction between Isoxsuprine Hydrochloride, cellulose acetate phthalate, ethyl cellulose and polyvinyl pyrrolidone was studied by FTIR, the results of FTIR it was confirmed that there were no chemical reaction in between drug and polymer. The compatibility study of drug and polymer were confirmed by DSC. **Results:** The results of FTIR it was confirmed that there were no chemical reaction in between drug and polymer. The *in vitro* drug release found in between range of 91.97% to 98.78% the highest % CDR was shown by formulation MS5. The optimized formulation (MS5) demonstrated favorable % entrapment efficiency (93.6%), % buoyancy (78%) and % cumulative drug release (98.78%). SEM revealed the release of Isoxsuprine Hydrochloride in controlled release pattern from spherical and porous microsponges. **Conclusion:** This study provides a new approach to formulate and evaluate the microsponges of Isoxsuprine Hydrochloride for treatment of premature labor during pregnancy.

Key words: Microsponges, Isoxsuprine Hydrochloride, Cellulose acetate phthalate, Quasi emulsion solvent diffusion, Site specific absorption.

INTRODUCTION

Administration of the drug through the oral route is most convenient, economical and common. Although the oral drug delivery system suffers from problem with absorption, short half-life as well as elimination. These problems can be avoided by formulating orally controlled release formulation for slow release of the drug into the gastrointestinal tract. This route can be easily utilized for the development of sustained and controlled release formulation of drugs. The oral route of drug delivery is most selective because of its economy, convenience and huge patient acceptance.[1] The commonly used solid dosage forms are capsule and tablet; formulated nanoparticles, microparticles, microsphere, microsponge and nanospheres may be administered to a patient in the form of tablets and capsule. Microsponge drug delivery system is patented[2] highly cross-linked, porous, a polymeric system that can entrap a broad range of active ingredients and release them by enhancing performance.[3] Microsponges are mostly used for topical controlled release drug delivery system, but recently it can be used for oral drug delivery with solid dosage forms like tablet and capsule. Microsponge drug delivery system offers delivery of drug with a minimum dose, enhanced stability, least side effects and controlled release of the drug.[4] Polymers

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