Keywords: Flunarizine dihydrochloride, mouth dissolving films, pullulan, taro gum, natural polymers, drug release kinetics.

PC-408

DESIGN AND OPTIMIZATION OF ANTIPSORIATIC DRUG-LOADED NANOSTRUCTURED LIPID CARRIERS FOR EFFECTIVE PSORIASIS MANAGEMENT

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Drug delivery methods based on lipids may be able to capture hydrophilic and hydrophobic molecules, increase the bioavailability of medications that are not highly soluble in water, and shield them from premature deterioration. The novel second-generation lipid nanoparticle that functions as a bioactive carrier system is called a nanostructured lipid carrier (NLC). Both hydrophilic and hydrophobic drugs can be transported by nanostructured lipids, which are biocompatible drug carriers. NLCs have a large loading capacity, superior physical stability, good permeability, and are far less expensive than carriers based on polymers or surfactants. Since the majority of antipsoriatic drugs on the market today are BCS class II and IV medications and have solubility and permeability issues, bioavailability is the main factor. This might be fixed by creating NLCs loaded with roflumilast and pimecrolimus. The typical particle diameter for NLCs is between 10 and 1000 nm. Using the melt homogenization method in conjunction with ultrasonication, Roflumilast and Pimecrolimus loaded NLCs were successfully created. Approximately 2-3% of people worldwide suffer from psoriasis, with incidence rates differing greatly between areas and demographics. Some regions of Asia have rates as low as 0.4%, while other regions of Northern Europe claim rates as high as 11%. It is believed that psoriasis affects about 60 million people globally. The range of psoriasis prevalence in India is 0.44 percent to 2.8%. The formulation of the NLCs involved melt homogenization and ultrasonication, yielding nanoparticles with a mean size of 200–400 nm and a negative zeta potential of -26 mV to -30 mV. This confirmed that the nanoscale dimensions were appropriate for topical delivery and had good stability against aggregation. The study's significance lies in its capacity to improve permeability, bioavailability, avoid first-pass metabolism, boost patient compliance, and reduce dosage and size.

Keywords: Nanostructured Lipid Carriers, Roflumilast, Pimecrolimus, Melt Emulsification, and Psoriasis.

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TRANSETHOSOMES: A NOVEL CARRIER FOR ENHANCED DERMAL DELIVERY OF CICLOPIROX OLAMINE FOR FUNGAL INFECTION

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Now-a-days a tremendous research work is going on to overcome the barrier properties of the skin. Despite of major research and development efforts in this system and the advantages of these routes, low stratum corneum permeability limits the usefulness of topical drug delivery. Transethosomes were developed to improve the solubility, bioavailability and permeability. Ciclopirox olamine is a synthetic, broad-spectrum anti-fungal agent belonging to the hydroxypyridone , useful in the treatment of superficial fungal infections. A distinctive feature of the drug is that no single case of fungal resistance has been reported so far. Ciclopirox olamine loaded transethosomes were formulated by Cold method using different ratios of edge activators (oleic acid, Tween 80 and Poloxamer 407). The transethosomal formulations were evaluated for size, shape, entrapment efficiency and in-vitro drug release. The transethsomes appeared as spherical in shape and size range was found to be 185.0 to 461.5 nm. The entrapment efficiency was found in the range of 70.93 to 80.93% and in-vitro drug release in the range of 65.52 to 80.44 % at the end of 24 hrs. Transethosomes prepared with tween 80 and phospholipids in the ratio of 1: 0.3: 3 were found to be the most effective and were incorporated into 1% carbopol gel. The ciclopirox olamine formulation was loaded into topical gel by incorporating Carbopol 934 as a gelling agent. The formulated gel was evaluated for various physicochemical parameters like appearance, pH, spreadability, viscosity, in-vitro drug release and antifungal activity. The in-vitro drug release study was carried out using phosphate buffer saline pH 7.4 was found to be 71.66 % at the end of 12 hrs. This study has suggested that ciclopirox olamine loaded in transethosomes and incorporated in gel is the superior topical antifungal formulation compared to plain drug gel and marketed formulation.

Keywords: Ciclopirox olamine, Transethosomes, Edge Activator, Soya Phosphotidylcholine

PC-410

DESIGN AND DEVELOPMENT OF NAIL LACQUER LOADED WITH SILVER NANO PARTICLES OF POLY HERBAL EXTRACT FOR SYNERGETIC ANTIFUNGAL ACTIVITY

SHEELA VERMA

Nail fungus, also known as onychomycosis, is a common infection that can affect fingernails or toenails, causing them to become thick, discolored, and brittle. The infection often starts as a small white or yellow spot under the nail tip and can spread, causing the nail to thicken, change shape, and potentially detach from the nail bed. In the current research work, nail lacquer loaded with silver nanoparticles of alcoholic extracts of Curcuma longa (Turmeric), Carica papaya (Papaya), Ocimum tenuiflorum (Tulsi/Holy Basil), and Azadirachta indica (Neem) were prepared and evaluated for antifungal activity. Individually ethanolic extracts of above said herbal powders were obtained by maceration process. Silver nanopaticles were prepared from these extracts by silver nitrate reduction process. They were evaluated for particle size (PS), entrapment efficiency (EE), polydispersity index (PDI) and Zeta potential (ZP) individually. Various ratios of ethyl cellulose and eudragit RL 100 along with solvents such as ethanol, ethyl acetate and acetone were studied to optimize the composition of the plain Nail lacquer. Measured amount of each herbal nano particles were combined with optimized ratio of ethyl cellulose and eudragit RL 100 to obtain nail lacquer. The obtained formulation was evaluated for pH, Viscosity, spreadability, film thickness and antifungal activity. The results obtained for the above said test parameters for Silver nanoparticles of each herbal extracts, and nail lacquer were well within the acceptance limits. The antifungal activity of the formulation was evaluated in comparison with the reference standard of Fluconazole against Candida albican and results were found to be satisfactory. In conclusion the prepared nail lacquer loaded with silver nanoparticles of polyhedral extract has potential in treating Onychomycosis because of its promising antifungal activity.

Keywords: Nail lacquer, Silver nanoparticles, polyherbal, antifungal, Onychomycosis.

PC-411

DESIGN AND EVALUATION OF A PH-TRIGGERED REBAMIPIDE IN SITU GEL: A SUSTAINED DRUG DELIVERY STRATEGY FOR DRY EYE DISORDER

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In the present study, a Rebamipide-loaded ophthalmic in situ gel was formulated and evaluated for the treatment of dry eye syndrome. The objective was to enhance ocular bioavailability and prolong residence time by overcoming the rapid precorneal drainage of conventional formulations. The in situ gel was prepared by a pH-triggered method using Carbopol 940 and HPMC K4M. Thirteen formulations were designed by varying the polymer concentrations and optimized using Design Expert software. The formulations were evaluated for pH, viscosity, gelling capacity, sterility, in vitro release, and stability. The FTIR analysis confirmed no drug–polymer interaction. The optimized formulation containing 0.6 g Carbopol 940 and 0.4 g HPMC K4M exhibited a pH of 5.0, viscosity of 1274 cP, and a gelling time of 28 seconds. Stability studies over 3 months showed negligible change in viscosity (1274 → 1258 cP), pH (5.0 → 5.1), and gelling time (28 → 29 s). The in vitro release studies indicated sustained drug release over 8 hours. Therefore, the optimized Rebamipide-loaded in situ gel demonstrates potential as a novel ocular delivery system with enhanced bioavailability, prolonged residence time, and reduced dosing frequency, thereby improving patient compliance in the management of dry eye syndrome.

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