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Sponsored

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"Invigorating Research in Pharmaceuticals: Reasonable Industrial Approach"

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Souvenir and Abstract Book

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DESIGN, DEVELOPMENT AND CHARACTERIZATION OF NANOSTRUCTURED LIPID CARRIERS FOR NOSE TO BRAIN DRUG DELIVERY

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ABSTRACT

This stud aims at design, development and characterization of nanostructured lipid carriers (NLCs) for nose to brain drug delivery. Present investigation attempts to deliver CNS acting drug {antidepressant} through intranasal route. Intranasal delivery of drug shows fast onset of action due to directly targeting to brain tissues and reduces the dose of drug and minimizes the side effects. VNL-HCl-NLCs were prepared by utilizing hot high pressure homogenization technique (HPH). 1% soya lecithin was chosen as stabilizer respectively. The concentrations of Precirol ATO 5 (solid lipid), oleic acid (liquid lipid) and Poloxamer F 68 were based on the runs developed by CCRD optimization process. VNL- HCl has been examined. Precirol was selected as the solid lipid matrix for encapsulation of VNL- HCl. NLCs were further characterized for their mean particle size, loading parameters, and their morphology. Particle size and entrapment efficiency of VNL-HCl-NLCs was found to be in the size range between 101.1 to 242.4 nm and 63.43 % to 98.56 %.The Cumulative % drug release with respect to time was found to be 94.4 % for the optimized batch. From the oral bioavailability study it became evident that enhancement in the bioavailability of drug loaded in NLCs.The microscopic study indicated smooth surface and uniform size distribution. From stability study of the lyophilized formulation it was found that NLCs were found to be stable for the period of 3 months at 25 ± 2°C and 60 ± 5% RH.

Keywords Venlafaxine hydrochloride, Nanostructured lipid carriers, Brain drug delivery

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NANOMATERIALS IN COMBATING MULTI-DRUG RESISTANCE BACTERIA

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ABSTRACT

Development of multidrug resistance (MDR) is increased when the application of antibiotics not in accordance with accepted standard. Increase in antibacterial resistance for infective bacterium is harmful to the human health. Antibiotic resistance is the biggest challenge to the medical profession to treat the infectious diseases. Antibiotics of natural as well as semi-synthetic origin shows the antibiotic resistance, however additionally against strictly artificial compounds (like fluoroquinolones) or which are not enter the cells (such as vancomycin) also observed resistance of antibiotics. This situation is leading to reduced therapeutic formulation of new drugs and strategies for combating antibiotic resistance shown by many microbial species. Nanotechnology is the recent development to formulate nanoparticles with effective physico-chemical properties and it is the new line of treatment against MDR bacteria. Data was gathered by searching Pubmed database. The relevant keywords were antibacterial activity of nanoparticle, nanoparticle combatting MDR, antibacterial mechanism of nanoparticles. The mostly accepted mechanisms of nanoparticles are metal ion release, oxidative stress induction and non-oxidative mechanisms, Biofilm formation, Generation of ROS. Nanoparticles will target antibiotic agents to the positioning of infection, so high doses of drug are required at the infected site, thereby overcoming resistance. Nanoparticle gives effective antibiotic activity against MDR bacteria, such as Pseudomonas aeruginosa, Klebsiella pneumoniae, Acinetobacter baumanii, Mycobacterium tuberculosis, vancomycin resistant enterococci, Staphylococcus aureus and others. In this review, we are going to summarize the present analysis on nanomaterials and the way these may be applied to fight MDR.

Keywords Nanoparticles, Anti-biotic resistance, mechanism of nanoparticles, Staphylococcus aureus, E. coli.