

2nd International Conference on Pharmaceutics & Novel Drug Delivery Systems

20-22 February 2012 San Francisco Airport Marriott Waterfront, USA

TITLE

Oral Delivery of Diacerein Loaded Lipid Nanoparticles using chondroitin Sulfate as Carrier for Treatment of Osteoarthritis

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Diacerein is novel chondroprotective agent intended for treatment of Osteoarthritis (OA), a degenerative joint disease. Its active metabolite rhein selectively inhibits synthesis of interleukin-1 (IL-1) and down regulates production of nitrous oxide (NO), responsible for the cartilage degeneration. Diacerein suffers with problems of poor water-solubility, low bioavailability, instability in the basic pH and laxative action. Therefore, in present study an attempt has been made to prepare Solid Lipid Nanoparticles (SLNs) of Diacerein and indirect targeting of prepared SLNs to joint cartilage using chondroitin sulphate as carrier. Diacerein was suspended in methanol and added to the melted lipid (stearic acid) under stirring, then added to hot aqueous media containing poloxamer F68 & citric acid under 15000 rpm using IKA® homogenizer for 10-12 minutes. After that suspension was added to chondroitin sulphate solution under same condition of homogenizer for 8-10 minutes. Finally suspension was treated for 5 minutes using Hielscher® ultrasonicator. SLNs were characterized for particle size, zeta potential, free drug, total drug content, Entrapment efficiency, TEM and DSC. In-vitro drug release study was carried out by dialysis bag technique. Stability study was performed at 25 °C/60% RH for three months for lyophilized SLNs. Pharmacodynamic studies were performed with iodoacetic-acid induced osteoarthritis experimental rat model. Histology of knee joint of rat was done for assessing the effect of the SLNs. Diacerein loaded SLNs were successfully prepared with particle size 382 nm with maximum 88% EE and release profile up to 12-13 hrs. In-vivo studies reveal the therapeutic efficacy of the prepared formulation.

Biography

Achint Jain has 9 international publications & completed his Masters in Pharmacy from BITS, Pilani, Rajasthan, INDIA and doing his PhD under Prof. Sanjay Singh, who has more than 50 international research publications in reputed journals, around 30 national publications & many book chapters and also serving as editorial board member of many reputed journals. He has more than 19 years' research experience in the field of pharmacy.