Transferosomes Loaded Topical Drug Delivery System Of Methotrexate For Rheumatoid Arthritis

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Abstract

The purpose of this study to develop transfersomes loaded transdermal patch of methotrexate for rheumatoid arthritis. Rheumatoid arthritis is an autoimuune disease that causes chronic inflammation of joint. Transfersomes are highly deformable vesicles and known to to have considerable potential as drug carriers. In the present research work effort was made to develop transfersomes loaded with methotrexate. The transfersomes based on phosphatidylcholin 95% (Phospholipon 90G) were prepared by thin film hydration technique. The solvent system used was chloroform and methanol (6: 4), hydration medium was phosphate buffer pH 7.4. The formulation parameter like organic solvent system, volume of solvent, speed of rotation, drug to lipid & PC to SC ratio & vacuum to obtain a stable formulation. The optimized batch was then freeze dried for 18 hours to obtain a free flowing powder product. Mannitol in the concentrations of 2%, 4%, 6% and 8% were used as cryoprotectant. The final batch prepared was characterized by globule size and size distribution, zeta potential, %drug entrapment and drug release. The globule size and zeta potential of the optimized formulation were found to be 130 nm and

-36.8 mV respectively. Percent drug entrapment was 49.36 %. *In vitro* drug release studies showed a release of 94.95% of methotrexate after 6 hours. Mannitol at 8% w/w concentration gave better cryoprotection. The prepared transfersomes were added to an acrylic adhesive and HPMC K15M to obtain a new hybrid transdermal patch termed as transfersomes loaded patch system. Patch were optimized on the basis of parameter like thikness, folding andurance, tensile strength, moisture content & in vitro drug release. Hence, the prepared transferosomes Loaded can be used by transdermal route to treat RA.

Keywords: Transfersomes, Methotrexate, Acrylic adhesive, HPMC K15M