DESIGN AND DEVELOPMENT OF MICRONEEDLE PATCH OF LELUNOMIDE

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ABSTRACT

Problem Statement: Arthritis is a disease of the joint that involves inflammation of one or more joints. The common symptoms of arthritis disorders include varied levels of pain, swelling, joint stiffness, and sometimes a constant ache around the joints. More than 20 million individuals affected with rheumatoid arthritis on their daily basis. Conventional dosage forms of leflunomide having serious side effects while taking orally. Like Cough, Hair loss, Chest pain, muscles cramp. Allergic reaction like rash, trouble breathing.

Purpose: The purpose of this study was to resolve conventional dosage forms related problems, which are at increased risk for serious side effects, when administered through oral route. Administration of leflunomide could deliver to the Systemic action in rheumatic disease which would reduce the side effects of the drug. Microneedle Patch having potential to deliver drug topically, therefore the purpose of this study was formulating Microneedle Patch for the topical delivery of leflunomide.

Methods: microneedle mould was prepared by using m-seal as a base and microneedle tip was used for the formation of micro pores. Microneedle patch was prepared by using previously fabricated microneedle mould. Polymer and plasticizer were dissolved in water, drug was added after Cooling the solution. The resultant solution was poured into microneedle mould and stored in room temperature for 24 hrs. After 24 hrs patch was peeled out from the mould and evaluated following parameter like drug content, % Elongation, Folding Endurance, Drug Release study.

Result: the formulation F2 containing 20% of PVA, 5% of PVP-K30 and 1% of PEG-400 with Solvent used water contained Patch was the optimised batch with drug release 98.71±0.521 % (Dialysis membrane). Skin irritation test showed that there was no any type of irritation was produced. Stability study shows developed Microneedle Patch was stable at 30º C ± 2º C at 65 ± 5% RH (Room Temperature) and 40º C ± 2º C at 75 ± 5% RH (accelerated condition) after One months.

Conclusion: so, this Microneedle Patch formula (F2) is considered to be a potential System for a Leflunomide for delivering drug topically.

Keywords: Leflunomide, Microneedle Patch, Rheumatoid Arthritis