Schizophrenia can be defined as a disturbance that must last for six months or longer, including one month of delusions, hallucinations, disorganized speech, grossly disorganized or negative symptoms. Despite the critical importance of medication, nonadherence has been recognized as a problem worldwide and maybe the most challenging aspect of treating patients with schizophrenia. Enhancing adherence to antipsychotic medications has the potential to reduce psychiatric morbidity and costs of care substantially. Fluphenazine Decanoate (FLU-D) is one of the long-acting antipsychotics used as a maintenance treatment of schizophrenia, it is administered as an intramuscular injection every 14-35 days. However, FLU-D requires a professional health care provider and specific administration procedures. In addition to the pain and inconvenience of the typical hypodermic needle. Transdermal long-acting delivery of FLU-D using dissolving microneedle MN system has the potential to provide convenient noninvasive long-acting delivery of this lipophilic antipsychotic.

Methods:

To evaluate the physical ability of the MNs, a compression force test was performed by a TA.XT2 Texture analyser. The height of individual MNs was measured using Leica EZ4W stereo microscope before and after the test to determine the reduction of MNs height.

To evaluate the insertion ability, MNs were inserted into full-thickness porcine skin manually and Optical coherence tomography (OCT) images were taken. Further, drug content in MNs was determined using a validated High performance liquid chromatography (HPLC) method.

Results:

FLU-D loaded dissolving MNs showed good physical and insertion properties, the mean of %height reduction is 5.23 ± 0.91 and OCT images showed that the mean of inserted length is 20.48 µm. In terms of drug content in MNs 0.99 ± 0.18 mg per array was found.

Conclusions:

A promising FLU-D loaded dissolving microneedles system has been developed. The viable physical and insertion properties of this system have been proved in addition to the drug content. Further in-vitro studies are required to address the drug release.

References:

3. Higashi, K., Medic, G., Littlewood, K. J., Díez, T., Grausfam, O., and De Hert, M. (2013). "Medication adherence in schizophrenia: factors influencing adherence and consequences of nonadherence, a systematic literature review"

For Further details contact: Jabuershaid01@qub.ac.uk