Formulation, Development and Evaluation of Proniosomal Based Oxybutynin Chloride Gel in Overactive Bladder Treatment

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Abstract—Background: The aim of the present work is to improve the efficacy of oxybutynin chloride and to formulate oxybutynin chloride proniosomal based gel by incorporation of suitable adjuvants for use in all population. Methods: Proniosomal gel was prepared via coacervation phase separation method by using various non-ionic surfactants, lipids, soy lecithin and isopropyl alcohol as solvent. The prepared proniosomal gel were characterized with regard to entrapment efficiency, vesicle size, surface morphology, stability, ATR-FTIR study, in vitro skin permeation study, in vivo animal study as well as histopathological study. Results: The drug entrapment was more than 85% and the vesicle size of pronosome varied between 0.38μm to 5.0μm. Proniosomes prepared after hydration were of spherical shape. It is suitable to store proniosomal gel at room temperature. There is no significant shift in the peaks corresponding to drug or excipients in ATR-FTIR spectrums. Most of the formulations exhibiting more than 50% of drug permeation and P3 gel has the highest percentage of permeation. The selected proniosomal gels (P3 and P4) showed faster recovery of cholinergic effect on salivary gland than oral formulation. Gel P3 and P4 also produced significant therapeutic effect in reduction of urinary frequency. Histopathological study demonstrated that there is improvement in bladder morphology with gels P3 and P4. Conclusion: These results indicated that oxybutynin Cl is suitable to be incorporated into proniosomal based gel of transdermal delivery for the treatment of OAB.

Keywords— Proniosomes, transdermal delivery, oxybutynin chloride, permeation.

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