Thesis Title The Evaluation of *In Vitro* Release of Piroxicam from Topical Formulations.

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ABSTRACT

0.5% piroxicam gel and 0.5% piroxicam cream were formulated with the additions of penetration enhancers. Propylene glycol, ethanol and isopropyl myristate were used in various concentrations as the penetration enhancers in the formulations. The effectivenesses of the formulations were evaluated by the *in vitro* drug release through cellophane membrane using simple osmosis apparatus and by the *in vitro* skin permeation through full-thickness newborn pig skin using Franz's diffusion cell apparatus. The obtained data were analyzed with Higuchi's equation and Fick's law of diffusion. The physical and chemical properties of the formulations were also examined for their physical stability and their drug content uniformity. For comparative study, two selected commercial products of piroxicam gel Feldene® and Flamic®, were selected for the evaluation of their effectivenesses by the same *in vitro* drug release and skin permeation methods.

The results showed that all the formulations in the dosage form of gel exhibited much higher drug release rates and skin permeation rates in comparison to the dosage form of cream. The types and the concentrations of the enhancers used had pronounced effect on both the drug release and the drug permeation. It was found in this study that 0.5% piroxicam gel with the combination of ethanol and propylene glycol in various ratios were very effective as indicated by the high release rates and the high skin permeation rates of piroxicam. It was also found that the release rate and the permeation rate were dependent on the effective diffusion coefficient and the skin permeability coefficient, respectively.