

Thesis Title Effect of Skin Enhancers on *In Vitro* Release and
In Vitro Skin Permeation of Betamethasone Valerate
Creams.

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Date of Graduation 22 May B.E. 2538 (1995)

ABSTRACT

0.1% betamethasone valerate creams were formulated with the additions of penetration enhancers. Propylene glycol , dimethyl sulfoxide , isopropyl myristate , and Azone[®] 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 and *in vitro* skin permeation through full thickness newborn pig skin using modified Franz's diffusion cell apparatus. The clinical effectivenesses were also evaluated by *in vivo* vasoconstriction method. The obtained data were analyzed with Higuchi's

of the formulations were examined for their physical stability and drug content analysis. For comparative study , two selected commercial products: Betnovate[®] and Betamethasone[®] were also examined for their *in vitro* release and *in vitro* skin permeation.

The results showed that the type and the concentration of the enhancers used had pronounced effects on both the drug release and the drug permeation. It was found in this study that 0.1% betamethasone valerate with the addition of 2-5% Azone[®] and 20-30% IPM were very effective as indicated by high release rates and high skin permeation rates of betamethasone valerate. It was also found that there were a good correlation between *in vitro* release and *in vitro* skin permeation and a good correlation between *in vitro* and *in vivo* methods of this study.