Thesis Title The Development of Nicotine Transdermal Patches.

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ABSTRACT

Nicotine transdermal patch was developed as an aid to stop smoking. It was prepared by using an acrylic pressure sensitive adhesive emulsion as a polymer matrix. The drug was dissolved in this polymer matrix, and then cast it onto backing membrane. The *in vitro* studies of nicotine released from the nicotine transdermal patch were performed in modified-Franz diffusion cell using cobra snake skin as a model membrane. This study was designed to study the release profiles of nicotine from the nicotine patch, the effects of nicotine concentrations and film thickness on release rate, and to compare the release profiles of nicotine between the nicotine patches developed in this experiment and the commercial product (Nicotinell®).

It was found that the release profiles of nicotine from all formulations followed Q vs. $t^{1/2}$ profile. To study the effects of nicotine concentrations; 5, 7.5, 10, 20, and 40% w/w of nicotine were used to prepare the transdermal patches. The results indicated that the release rate of nicotine concentration between 5 and 20% w/w were observed to increase in proportional to the increase of nicotine concentrations. To study the effects of film thickness; 0.0150, 0.0310, 0.0623 g/cm^2 of film thickness were used. The results showed

that the release rate was increased in accordance with the increasing of film thickness. For the comparative release profiles of nicotine patches developed in this study and Nicotinell®, it was found that the release rate of 7.5% w/w, 0.0310 g/cm^2 nicotine patch was close to Nicotinell®.