CHAPTER I

INTRODUCTION

Through the 1960S and 1970S, the quinolones were not considered as an important class of drugs because their bacterial activities are limited against gram-positive species and they did not produce adequate tissue concentrations after oral ingestion in order to treat systemic infections (Neu, 1987).

Until the modification of chemical structure of quinolones were improved. New quinolones increased antibacterial activity which included gram-negative species such as Pseudomonas and gram-positive species such as Staphylococci. Also, their toxicities were low (White, 1986). Of these new quinolones, ciprofloxacin has been shown an extremely wide in vitro spectrum of activity. Ciprofloxacin is widely distributed into body tissues and fluids following oral administration. It is used to treat many types of infection of urinary tract, respiratory tract, skin and skin structure, bone and joints, gastrointestinal tract and gynaecological organs (Campoli-Richard et al. 1988; McEvoy, ed. 1989; Neu, 1987).

Ciprofloxacin is available in both tablet and injection dosage form. In Thailand, there are 4 brands of 250 mg ciprofloxacin film-coated tablets in the market. One is the innovator's product with higher retail price and the others are locally manufactured products. As the formulation and production of the tablets may markedly affect the bioavailability of the drug. Thus, the

bioequivalence of these preducts is essential to be evaluated.

It is therefore this study is conducted to compare the bioavailability of ciprofloxacin tablets commercially available in Thailand and to investigate the pharmacokinetics of ciprofloxacin after oral administration in healthy male volunteers.

Objectives

1. To compare the bioavailability of ciprofloxacin tablets commercially available in Thailand.

2. To investigate the correlation of the in vitro parameters (disintegration time and dissolution rate) with the in vivo parameters (C_{max}, t_{max} and AUC)

3. To investigate the pharmacokinetics of ciprofloxacin tablet after a single oral administration in Thai healthy male volunteers.

Significance of the study

1. This study will provide bioavailability data of ciprofloxacin tablet commercially available in Thailand which would be useful in selecting the cheapest product that is bioequivalent to the innovator's product.

2. This study will provide some pharmaceutic factors affecting ciprofloxacin tablet bioavailability that may be used to predict the in vivo bioavailability of the tablets.

3. This study will provide the pharmacokinetics of ciprofloxacin following an oral administration in Thai healthy male volunteers.