# Efect of $Al(OH)_3$ and $Mg(OH)_2$ Suspesion Dosage Form on the Absorption of Oral Ciprofloxacin

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*Potential interaction of fluroquinolone with other drugs have been established in the several reports. The absorption of fluroquinolones were almost entirely inhibited by concomitant administration of di and trivalent cations such magnesium and aluminium in the antacids were significantly decreased the absorption of ciprofloxacin through formation of a complex. The effect of antacid (Antasida DOEN) 1.4 ml/kg body weight doses which containing polyvalent cation Mg $(OH)_2$ and Al(OH) $_3$ on the absorption of ciprofloxacin. were examed in healthy rabbit. Twelve subjects were given 23 mg/ml BW ciprofloxacin alone as control. On day 8 the six subjects were given antacid and ciprofloxacin concomitant and the other were given antacid two hours after ciprofloxacin. The absorption parameters of ciprofloxacin were determined by spectrofluorometric method. Those parameters were Cmax, tmax and AUC, the administration of ciprofloxacin and antacids concomitantly result Cmax, tmax and AUC were 1.27±0.45μg/ml; 110±48.99 minutes and 248.63±94.77μg.minutes/ml respectively in a significant decrease in ciprofloxacin absorption ($p<0.05$) and the administration of antacids two hours after ciprofloxacin result Cmax, tmax and AUC were 1.37±0.65μg/ml;75±36.74 minutes and 245.09±100.46 μg.minutes/ml respectively in a significant decrease in ciprofloxacin absorption ($p<0.05$). Percentages of relative bioavailability compared with control values were 27.06±16.70% and 8.77±6.97% for concomitant and two hours after ciprofloxacin respectively.*

**Keywords:** *Ciprofloxacin, $Mg(OH)_2$ , $Al(OH)_3$ , antacid, Spectrofluorometric*

## INTRODUCTION

Ciprofloxacin (fig.1) is fluoroquinolone antibiotic a broadspectrum which can against positive and negative microorganism as synthetic antibiotic and bactericid especially negative microorganism *P. aeruginosa* (Mc Evoy, 2002). Ciprofloxacin were used for treatment desease: GIT, respiratory tract up and down; urinary tract, skin infection, which inhibit enzim topoisomerase II sub unit A (ADN g*yrase*) and topoisomerase IV in DNA synthesis as a potential antibacterial (Ball, 2000). Plasma concentrations in healthy volunteers reach a mean peak drug plasma concentrations ($C_{max}$) of approximately 2.8 and 5.2mg/L within 1 to 2 hours after oral administration of ciprofloxacin 250 and 500mg tablets, respectively. The oral absorption is very rapid and complete, the bioavailability of oral ciprofloxacin approaches 100% and it little affected by administration with food (Fish and Chow, 1997).

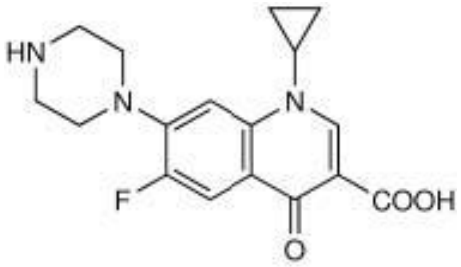


**Figure 1**. Ciprofloxacin

In separate study, the effect of antacid, sucralfat; food, $H_2$ receptor antagonis on fluoroquinolon interaction was examined (Radanst *et al.*, 1992). The interactions with aluminum and magnesium containing antacid with fluoroquinolones as ciprofloxacin, resulting in significantly decrease absorption and bioavailability when administered concurrently (Stockley, 2001). Nix *et al*. (1989) were reseached that plasma concentrations in healthy volunteers decreased 85% when ciprofloxacine was gived 5 until 10 minute after antacid (Maalox$^R$) because ciprofloxacine and antacid formed complex metal (Stockley, 2001). A measure such as $t_{max}$ does not adequately describe situations in which double peaking may occur or which prolonged absorption are observed. Antacid (Mg $(OH)_2$ and Al(OH) $_3$) is widely used for a variety of indications ( duodenal ulcer disease, dyspepsia, saur stomach), the mechanism of antacid are neutralize acid and stimulate mucosal defenses (Mc Evoy,2002). The probably that ciprofloxacin will be given to patients receiving long term therapy with antacid/$H_2$ blocker is high. Since antacid affect oral absorption of variety of agents, the effect of administration of antacid on the absorption of ciprofloxacin was studied (Radanst *et al.*, 1992), Therefore studies were perform to determined the effect of antacid administration on the oral absorption of ciprofloxacin in healthy rabbits by spectrofluorometric (El-Kommos *et al.*, 2003)

## MATERIAL AND METHODS

**Materials and reagents.** Ciprofloxacin was a kind gift of PT Kimia Farma. Methanol (HPLC gradient) was purchased from JT Baker, antacid DOEN was a kind gift of First Medipharma, dipotassium hydrogenphosphate and phosphoric acid 85% were purchased from Merck