

ABSTRACT

Effects of Sucralfate Suspension on the Absorption of Oral Ciprofloxacin HCl Using Rabbit Plasma

Several important interactions of fluoroquinolones with other drug have been reported in the literature. The absorption of all fluoroquinolones were almost entirely inhibited by concomitant administration of di- and trivalent cations, such as aluminium contained in sucralfate. The most plausible explanation for this interaction is the formation of ciprofloxacin-aluminum chelates. The effects of 0.47 mL/kg body weight doses of sucralfate suspension which is containing polyvalent cations, aluminum sucrose octa sulfate on the absorption of oral ciprofloxacin HCl after a single 23 mg/kg body weight doses were investigated in 6 rabbit subjects, randomized, cross over and single blind study. The 6 rabbits were enrolled in two studies. Each subjects got alone ciprofloxacin HCl administration as a control treatment. Treatments that were evaluated included the administration of sucralfate with single dose of ciprofloxacin HCl concomitantly (study 1) and the administration of sucralfate 2 hours after ciprofloxacin was given (study 2). The absorption parameters of ciprofloxacin HCl were determined by spectrofluorometric method. Those parameters included C_{max} , t_{max} , and AUC_{0-360} . In control treatment, the average value of C_{max} , t_{max} , and AUC_{0-360} were 1.34 $\mu\text{g/mL} \pm 26.15\%$, 160.78 minutes $\pm 5.85\%$ and 337.06 $\mu\text{g}\cdot\text{menit/mL} \pm 14.40\%$. In the study 1, the average value of C_{max} , t_{max} , and AUC_{0-360} were 0.68 $\mu\text{g/mL} \pm 15.49\%$, 420.66 minutes $\pm 25.49\%$ and 277.13 $\mu\text{g}\cdot\text{menit/mL} \pm 12.25\%$, and in the study 2 were 0.95 $\mu\text{g/mL} \pm 18.54\%$, 284.93 minutes $\pm 15.44\%$ and 309.75 $\mu\text{g}\cdot\text{menit/mL} \pm 11.71\%$. The administration of sucralfate and single dose ciprofloxacin HCl concomitantly resulted in a significant decrease in ciprofloxacin HCl absorption ($P < 0.05$). Percentages of degradation AUC_{0-360} 's treatment group on study 1 and study 2 to AUC's control group of each study were 16.32% and 6.66%. According to these result, the bioavailability of ciprofloxacin HCl impaired by concomitant dosing with sucralfate, but normal kinetics are restored by administering the drug 2 hours before ciprofloxacin HCl.

Keyword : Ciprofloxacin, sucralfate, spectrofluorometric, interaction of fluoroquinolone.