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The purposes of this study were to evaluate bioequivalence (BE) using ln-transformed pharmacokinetic parameters obtained from two fluconazole products and to develop the analytical methods for the quantitative determination of fluconazole in human serum. In addition, the in vitro dissolution profiles of the two fluconazole products at dissolution media: 0.1 M hydrochloride (KP Ⅶ Apparatus Ⅱ method) were assessed. BE was evaluated in 20 healthy male Korean volunteers in randomized crossover study. Single oral dose of 150 mg of each product was administered after overnight fasting. Blood samples were collected at predetermined time intervals and the concentrations of fluconazole in serum were determined using HPLC method with UV detection. The dissolution profiles of two fluconazole capsules were very similar. Besides, the pharmacokinetic parameters such as AUCt, Cmax and Tmax were calculated and ANOVA test was utilized for the statistical analysis of the parameters using logarithmically transformed AUCt, Cmax and untransformed Tmax. The results showed that the differences in AUCt, Cmax and Tmax between two capsules based on the Diflucan® were 4.96%, 5.65% and -13.76%, respectively. And also, the 90% confidence intervals were within the acceptance range of log(0.8) to log(1.25) (e.g., 1.01~1.08 and 1.00~1.12 for AUCt and Cmax, respectively). Consequently, all parameters met the criteria of KFDA guideline for bioequivalence, indicating that Flucona capsule is bioequivalent to Diflucan® capsule.

[PE2-17] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Improved Dissolution Characteristics of Silymarin and Their Bioavailability in Human Volunteers

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Silybin is the main component of *Cardus marianus* extracts (Silymarin) originated from Silybum marianum, called as milk thistle. It has a hepato-protective effect and is used clinically for the treatment of liver disease. But it is water-insoluble and is poorly absorbed from the gastrointestinal tract, resulting in very low oral bioavailability. Polymeric mixed-micelle precursor formulation containing surfactants, co-solvents, and block-co polymers with *Cardus marianus* extracts was made to enhance the dissolution rate of silybin and encapsulated with soft gelatin capsule. This precursor formulation forms micelle spontaneously when it contacts with gastro-intestinal fluid, and thereby can be absorbed rapidly. The oral bioavailability of the new formulation was estimated in twelve healthy male volunteers, and compared with that of a marketed product. After oral administrations of two capsules at a dose of 120 mg/kg as silybin, pharmacokinetic parameters including Cmax, Tmax, and AUC were obtained from the plasma concentration-time profiles of silybin : Cmax and $AUC_{0\sim8hrs}$ of the new formulation were 4.3 times and 2.4 times greater, respectively, than those of a marketed product.

[PE2-18] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Dose-Independent Pharmacokinetics of a New Neuroprotective Agent for Ischemia-Reperfusion Damage, KR-31543, after Intravenous and Oral Administration to Rats:

Hepatic and Intestinal First-Pass Effects

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The purpose of this study was to report dose-independent pharmacokinetics of KR-31543, a new neuroprotective agent for ischemia-reperfusion damage, after intravenous and oral administration and first-pass effects after intravenous, intraportal, intragastric, and intraduodenal administration in rats. After intravenous (10, 20 and 50 mg/kg) and oral (10, 20 and 50 mg/kg) administration, the pharmacokinetic parameters of KR-31543 were dose-independent. The extent of absolute oral bioavailability (F) was 27.4% at 20 mg/kg. Considering the amount of unabsorbed KR-31543 from gastrointestinal tract at 24 h (4.11%), the low F value could be due to the hepatic, gastric, and/or intestinal first-pass effects. After intravenous administration of three doses, the total body clearances were considerably slower than the reported cardiac output in rats suggesting almost negligible first-pass effect in the heart and lung in rats. The areas under the plasma concentration-time curves from time zero to time infinity (AUCs) were not significantly different between intragastric and intraduodenal administration of KR-31543, 20 mg/kg, suggesting that gastric first-pass effect of KR-31543 was almost negligible in rats. However, the values were significantly smaller (305 and 318 μg · mL/min) than that after intraportal administration (494 μg · mL/min) indicating considerable intestinal first-pass effect of KR-31543 in rats, approximately 40% of the oral dose. Approximately 50% of KR-31543 absorbed into the portal vein was eliminated by the liver (hepatic first-pass effect) based on intravenous and intraportal administration (the value, 50%, was equivalent to approximately 30% of oral dose). The low F value of KR-31543 after oral administration, 20 mg/kg, to rats was mainly due to considerable intestinal (approximately 40%) and hepatic (approximately 30%) first-pass effects.

[PE2-19] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Drug-drug interaction with DA-125 and the other anticancer drugs

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DA-125, a novel anthracycline analog containing fluorine with decreased cardiotoxicity and increased antitumor activity of adriamycin (ADM), developed by Research Laboratories of Dong-A Pharmaceutical. DA-125, water soluble prodrug of M1, is a β-alanine derivative of M1 (FT-ADM). DA-125 was rapidly hydrolyzed to M1, and M1 was metabolized to both M2 and M3. Both M2 and M3 were further metabolized to M4. The purpose of this study is to investigate the drug-drug interaction with DA-125 and the other anticancer drugs (prednisolone, 6-thioguanine, cytarabine, vincristine) using in vivo and in vitro assay. In vitro assay, when we used rat liver homogenate S9, the pattern of DA-125 metabolism was changed a little by prednisolone and 6-thioguanine. After oral administration of DA-125 and the other anticancer drugs to rats, we examined the changes of M1, M2, M3 and M4 plasma concentration. When DA-125 was co-administrated with prednisolone to rats, AUC of M4 was increased compared with control group. Therefore, it is considered that DA-125 has the possibility of the drug-drug interaction with prednisolone.

[PE2-20] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

The pharmacokinetics of tramadol hydrochloride in Korean healthy volunteers