

Bioequivalence study of zidovudine 100 mg capsule

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Abstract

The bioequivalence study of two oral formulations of zidovudine were evaluated; Antivir[®] (Government Pharmaceutical Organization (GPO), Thailand) as the test formulation and Retrovir[®] (Glaxo-SmithKline, USA), as the reference formulation. The two products were orally administered as a single dose of 100 mg zidovudine three capsules according to a randomized two-way crossover design to 28 healthy fasted Thai male volunteers. The washout period between treatment was 1 week. After drug administration, serial blood samples were collected at a specific time interval from 0-10 hours. The plasma zidovudine concentration were determined via HPLC technique. Individual plasma zidovudine concentration-time profile was analyzed for relevant pharmacokinetic parameters; the comparative bioavailability of the two products was determined by the analysis of variance (ANOVA) for two way crossover design, using logarithmic transformed data.

The results founds that the mean peak ($\bar{X} \pm SD$) plasma concentration (C_{max}) of Antivir[®] and Retrovir[®] were 3.34 ± 0.15 and 3.32 ± 0.21 ng/mL, respectively. The 90% confidence interval for the difference of C_{max} mean was 90.76 - 120.81 %. The time to peak plasma concentration (T_{max}) of Antivir[®] and Retrovir[®] were 0.49 ± 0.16 and 0.62 ± 0.35 hours, respectively. The difference time of peak plasma zidovudine concentration was 20.96%. The mean area under the curve (AUC) of Antivir[®] and Retrovir[®] were 3.37 ± 0.12 and 3.38 ± 0.14 ng.hr/mL, respectively. The 90% confidence interval for the difference of AUC mean was 91.22 - 104.69 %.

The present study revealed that the 90% confidence interval for the difference of C_{max} and AUC means were in the criteria of acceptance, which should be within 80-125%. Thus, this study demonstrated the bioequivalence of the test drug (Antivir[®]) and the reference drug (Retrovir[®]).

Figure 1 Mean plasma zidovudine concentration-time profiles from 28 subjects following a single oral dose of three capsules of 100 mg Antivir[®] and three capsules of 100 mg Retrovir[®].

