Pharmacodynamic comparison of two formulations of Acarbose 100-mg tablets.


Source

Department of Clinical Pharmacology and Therapeutics, Seoul National University College of Medicine and Hospital, Seoul Department of Pharmacology, Yonsei University College of Medicine, Seoul Department of Internal Medicine, Seoul National University Hospital, Seoul Seoul National University College of Medicine, Seoul Department of Clinical Pharmacology and Therapeutics, Asan Medical Center, University of Ulsan, Seoul, Korea.

Abstract

What is known and Objective: Acarbose, an α-glycosidase inhibitor, is used to treat diabetic patients. Pharmacokinetic evaluation of acarbose is difficult because <2% is absorbed systemically. The current investigation evaluated the bioequivalence of two formulations of acarbose through pharmacodynamic comparison. Methods: This investigation consisted of a pilot study and a main study. The pilot study had an open, single-dose, single-sequence design. Subjects received placebo and then two tablets of reference formulation (Glucobay®) 100mg tablet; Bayer Healthcare) on two consecutive days with sucrose. The main study was an open, randomized, two-period, two-sequence crossover study. Subjects randomly received placebo and two tablets of either test formulation (generic acarbose 100-mg tablet) or reference formulation with sucrose on two consecutive days in the first period. In the second period, placebo and alternative formulation were administered. Serial blood samples for pharmacodynamic assessment were taken after each administration. The maximum serum glucose concentration (G(max)) and the area under the serum glucose concentration-time profile (AUC(gluc)) were determined and compared. Results and Discussion: Five subjects completed the pilot study. The AUC(gluc) from dosing until 1 h post-dose (AUC(gluc,1 h)) was significantly different between the placebo and acarbose. A total of 33 subjects completed the main study. The mean differences in G(max) (ΔG(max)) and AUC(gluc,1 h) (ΔAUC(gluc,1 h)) for the reference formulation compared with placebo were 22·0 ± 18·3 mg/dL and 928·2 ± 756·0 mg min/dL, respectively. The corresponding values for the test formulation were 23·3 ± 21·2 mg/dL and 923·0 ± 991·4 mg min/dL, respectively. The geometric mean ratios (GMRs) of the test formulation to the reference formulation for ΔG(max) and ΔAUC(gluc,1 h) were 1·06 and 1·00, respectively, and the 90% confidence intervals (CIs) corresponding values were 0·79-1·39 and 0·64-1·36, respectively. What is new and Conclusion: The 90% CIs of GMRs for the pharmacodynamic parameters
chosen for bioequivalence evaluation of two formulations of acarbose did not meet the commonly accepted regulatory criteria for bioequivalence (0.80–1.25).

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