

Title	Optimizing Elective PCI: A Strategic Evaluation of Clopidogrel-Brand Versus Generic Approaches
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Abstract	Background/Objectives: Cardiovascular Disease (CVD) remains a leading cause of mortality globally, necessitating the use of antiplatelet drugs like clopidogrel to reduce thrombotic complications. Clopidogrel is administered as a loading dose for patients undergoing elective percutaneous coronary intervention (PCI). Given economic constraints in Egypt, dependence on generic medications is crucial, yet ensuring therapeutic equivalence is imperative. This study aimed to evaluate the equivalence of two generic clopidogrel formulations compared to brand clopidogrel. Methods: In this randomized, single-blind study conducted over six months, 115 patients undergoing elective PCI were enrolled. Participants received a 600 mg loading dose of clopidogrel, either as brand or one of the generics. The primary endpoint was the percentage change in platelet aggregation on ADP agonist 6 hours post-dose. Secondary outcomes included changes in platelet aggregation at 2 hours post-dose, changes from 2 to 6 hours, bleeding events, and troponin levels for detecting myocardial infarction. Results: Significant differences were observed in the primary endpoint ($p < 0.01$), with post-hoc analyses indicating greater efficacy of brand clopidogrel over the generics. No statistical differences were noted at 2 hours post-dose or in bleeding events, although there were significant differences from 2 to 6 hours, indicating variability in sustained efficacy. The Kruskal-Wallis test for the primary endpoint revealed a significant reduction in platelet aggregation ($p < 0.01$). Post-hoc comparisons showed significant differences between Group A and Group B ($p < 0.01$) and Group A and Group C ($p = 0.02$), with no statistical significance between Group B and Group C ($p > 0.99$). Conclusions: These findings suggest discrepancies in efficacy between brand and generic clopidogrel formulations, underscoring the necessity for rigorous evaluation and regulatory oversight to ensure therapeutic reliability in clinical practice.