

**Comparative study between succinylated gelatin (gelofusine)
versus Ringer's acetate regarding safety and efficacy in adult
patients undergoing cardiac surgery**

Thesis submitted for partial fulfillment of the MD degree in Anesthesiology

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(M.Sc. Anesthesia)

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Abstract

Introduction: Fluid homeostasis within the human body is the result of complex interactions between compartments and barriers and the prerequisite of stable hemodynamics. Compared with crystalloid solutions, colloids have a smaller volume of distribution and, therefore, fewer amounts of fluid and time are needed to restore intravascular volume deficits.

Aims: The aim of the current study is to prove therapeutic equivalence of a colloid (Gelofusine), versus a crystalloid (Ringer's acetate) regarding the volume effect and to test superiority of gelofusine versus Ringer's acetate regarding the effect on the acid base status, electrolytes, effect on coagulation and effect on renal & liver functions in adult patients undergoing cardiac surgery.

Methods and results: in this prospective, randomized, double-blinded study 60 adult patients who underwent cardiac surgery with CPB were randomly assigned to receive either succinylated gelatin or Ringer's acetate as priming and perioperative maintenance to assess their safety and efficacy. The primary variable was the volume of the study solution, Consecutive variables were arterial pH& base excess. Safety parameters were coagulation variables, hematological parameters (hemoglobin and hematocrit) clinical chemistry parameters (creatinine, urea, AST and ALT), serum electrolytes (Na & K), and adverse events.

The dose of the study solution was highly significant between the two groups (in group A -Ringer's acetate-: 3700 ± 427.0 ml in group B -gelofusine group-: 2360.3 ± 100.8 with p value <0.001).

The pH level and the BE values showed significant reduction from bypass time to the end point of the current study in the gelatin group. There were; significant changes in coagulation parameters and hematological parameters in the gelatin group.

Conclusion: In conclusion, the succinylated gelatin is more effective plasma expander and gets more hemodynamic stability than Ringer's acetate. However it has worse outcome regarding the acid base balance and coagulation parameters (Despite no detectable clinical changes). The safety regarding kidney and liver functions and serum electrolytes was comparable between the two groups.