This study evaluated factors that affect granulocyte-colony stimulating factor (G-CSF) adsorption in the infusion tube by measuring the G-CSF concentration, rate of G-CSF infusion, and volume of flush solution” Saelue et al (2019).

Abstract:
Purpose: This study evaluated factors that affect granulocyte-colony stimulating factor (G-CSF) adsorption in the infusion tube by measuring the G-CSF concentration, rate of G-CSF infusion, and volume of flush solution.
Methods: The concentrations of G-CSF in all samples were measured by an enzyme-linked immunosorbent assay (ELISA) using human G-CSF Quantikine® ELISA kits. The concentration of G-CSF, the rate of administration, and the volume of flush solution were studied respectively. The concentration of G-CSF and the rate of administration that had a significantly lower G-CSF percent recovery after the infusion via the infusion set were used for further investigation in the study. All samples were diluted with 5% dextrose in water (D5W) to the final concentration within the standard concentration range. All experiments were performed in triplicate.
Results: The concentration of G-CSF that was administered through the infusion tube at 20 µg/mL was a significantly higher G-CSF percent recovery compared with the G-CSF concentrations of 5, 10, and 15 µg/mL. The infusion rate of 15 and 20 mL/h percent recovery of G-CSF adsorption was significantly higher than the infusion rates of 30 and 40 mL/h. The concentration of G-CSF at 15 µg/mL and an infusion rate of 30 mL/h were selected to investigate the flush volumes of D5W on G-CSF adsorption. The D5W flush volume of 40 mL dramatically decreased the G-CSF adsorption with a recovery of $103 \pm 1.73\%$.
Conclusion: The G-CSF concentration of 20 µg/mL with an infusion rate of 20 mL/h, using a 40 mL D5W flush, was appropriate for intravenous G-CSF administration.

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