Developing a Recipe to Teach Elutions to Blood Bank Students

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ABSTRACT

PROBLEM: Hands-on practice of clinical laboratory testing procedures with real or simulated specimens builds skill and competency. However, blood bank serological procedures, such as antibody elution, may be challenging to practice due to difficulty in simulating the nature of the specimen. This study exhibits a technique to sensitize antibody onto packed red blood cells (pRBCs) in vitro in large quantities so it can be eluted and identified by multiple learners.

METHODS: Varying volumes of monoclonal anti-D antisera were incubated with a set volume of Rhesus-positive pRBCs. The direct antiglobulin test (DAT) was used to measure sensitization of the pRBCs. Optimum sensitization was considered a reaction strength of ≥2+ with immunoglobulin G (IgG) and a negative reaction for the saline control. A group of undergraduate clinical laboratory science students were given an aliquot from the optimally sensitized sample and instructed to perform a DAT with a reflex to elution if positive. The elution procedure followed the Immucor Gamma ELU-KIT II package insert.

RESULTS: Learners successfully obtained a positive DAT for IgG and afterward eluted and identified anti-D in the eluate, matching the results obtained by the expert. Reaction strengths observed varied between 1–2+ in the eluate when run against panel cells.

CONCLUSION: By developing this teaching tool, we solved the problem of simulating DAT-positive samples and made it easier for learners to practice competency in elution techniques. This method can be applied to clinical and education laboratories, allowing for technical skill building and clinical competency maintenance in students and active laboratory professionals.

ABBREVIATIONS: DAT - direct antiglobulin test, IgG - immunoglobulin G, pRBC - packed red blood cell.

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