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Validation of lateral flow assay for blood grouping on hemolyzed sample

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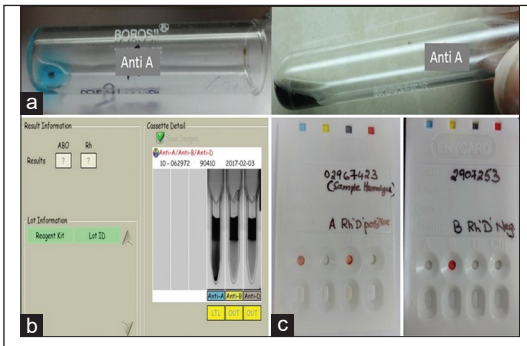

Figure 1: Blood grouping on hemolyzed sample. (a) Blood grouping by tube technique before and after hemolysis of the sample, (b) Column agglutination technique, (c) Lateral flow technique

Hemolysis, due to the breakdown of red blood cells, can occur *in vivo* or *in vitro*.[1] Grossly, hemolyzed samples can affect the results of many tests, and hence is a rejection criterion in most of the laboratories. *In vitro* causes can be addressed by repeat sampling; however, on some rare occasions performing a test on hemolyzed samples is inevitable. Occasionally, we receive hemolyzed samples from postmortem cases, following fetal autopsy for blood grouping at our immunohematology laboratory. Reporting blood group on the hemolyzed sample is difficult using current techniques (tube test and column agglutination technology), and most of the time, it goes unreported with a comment on sample suitability [Figure 1a and b].

Hence, we tried blood grouping of hemolyzed blood samples, using grouping cards based on the principle of lateral flow guided by capillary action (Erycard, Tulip Diagnostics, Verna, Goa). Sample pad with predried monoclonal antibodies (anti-A, anti-B, and anti-D) and a negative control slot (without reagent) is used in the card. The test is performed using whole-blood sample and reagent buffer as per manufacturer instructions. Visible red color patch indicates the presence of antigen and no color its absence.

To validate this procedure, we selected 20 blood samples of different combination of blood groups. The samples were subjected to hemolysis by adding distilled water or by freeze-thawing. Blood grouping was done by both conventional (test tube and column agglutination) technique and the proposed technique before and after hemolysis of the samples. Two investigators were involved in the process to avoid the interpretation bias.

The results of hemolyzed sample obtained using cards were accurately matching with the prehemolyzed sample results [Figure 1c]. Hence, we recommend the use of cards based on the principle of lateral flow technique for blood group reporting in the hemolyzed sample.

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Conflicts of interest

There are no conflicts of interest.

Reference

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