

## INTRODUCTION

Counting platelets is the most challenging part of CBC analysis. Modern hematology analyzers may use different methods to avoid interference and report reliable results, but sometimes this may require additional time, reagents, and cost. The objective of this study was to evaluate platelet counts on Beckman Coulter DxH 900 and Sysmex XN-9100 analyzers and assess platelet count estimation using the Full-Field Digital morphology analysis system, Scopio X100.

## METHODS

98 samples collected with K3 EDTA tubes were analyzed on the DxH 900 instrument (using advanced Coulter Principle) and on Sysmex XN-9100 (using impedance and fluorescent methods) within 6 hours of blood draw. Blood films were prepared for 53 samples and Plt estimation from Scopio X100 were compared to Plt count from DxH 900. MedCalc statistical software (Ostend, Belgium) was used for the analysis.

## CONCLUSION

Our results demonstrated good agreement between Plt count on the DxH 900 and Sysmex-XN instruments, both in impedance and Plt-F mode. Significantly fewer samples required review on the DxH 900, which used enhanced Coulter Principle and sophisticated algorithm for data processing and flagging. Platelet estimation from Scopio X100 demonstrated good agreement with automated Plt count, giving the possibility to use Plt estimation from Scopio X100 if the sample was flagged for review by a hematology analyzer.

## RESULTS

The DxH 900 analyzer demonstrated perfect agreement with Sysmex XN impedance method (Passing and Bablok regression  $[DxH\ Plt] = 0.994 * [XN\ Plt-I] + 2.5$ , correlation coefficient 0.987,  $p < 0.0001$ , Figures 1 and 2) and with Sysmex XN Plt-F (Passing and Bablok regression  $[DxH\ Plt] = 0.918 * [XN\ Plt-F] + 2.4$ , correlation coefficient 0.969,  $p < 0.0001$ , Figures 3 and 4). Comparing Scopio Plt estimation with Plt count from the DxH 900 analyzer, we obtained Passing and Bablok regression  $[Scopio\ Plt] = 1.015 * [DxH\ Plt] + 2.5$ , correlation coefficient 0.907,  $p < 0.0001$ . On the subset of 32 samples, we analyzed the frequency of flags indicating low confidence in results and need for review (R flag on DxH 900 and "\*" on Sysmex XN-9100). DxH 900 flagged only 4 samples, while Sysmex XN-9100 21 samples were flagged in impedance mode, and after re-run in Plt-F mode, 3 samples were flagged by Sysmex XN, requiring review even after analyses in two different modes.

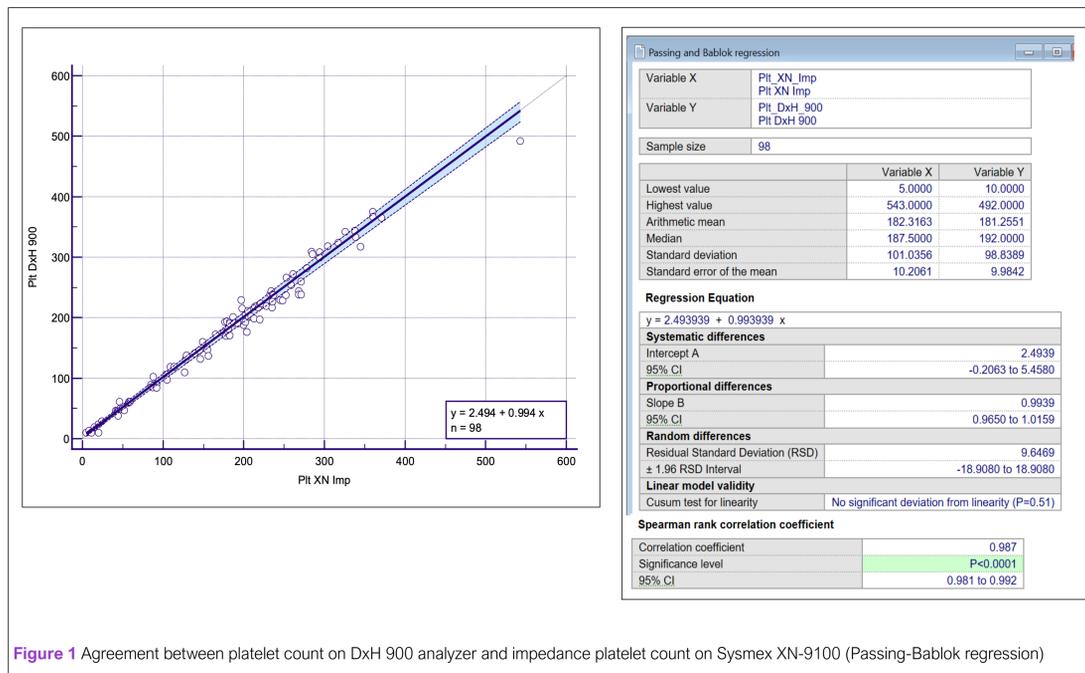


Figure 1 Agreement between platelet count on DxH 900 analyzer and impedance platelet count on Sysmex XN-9100 (Passing-Bablok regression)

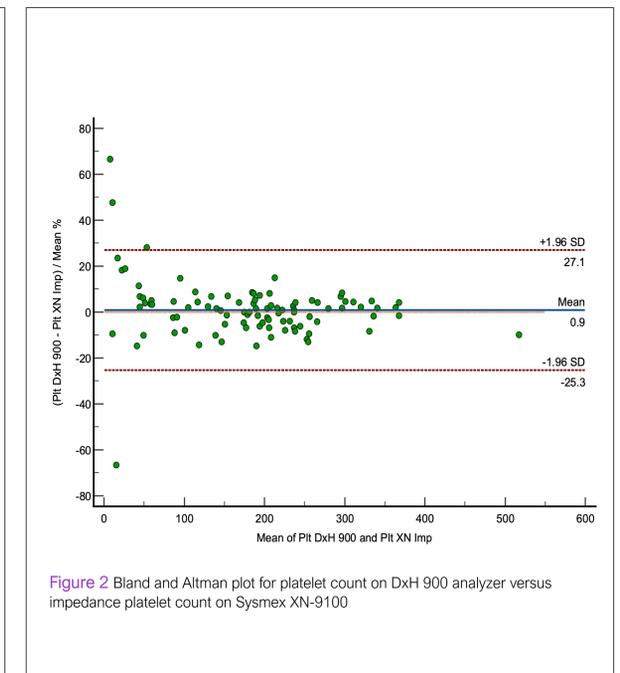


Figure 2 Bland and Altman plot for platelet count on DxH 900 analyzer versus impedance platelet count on Sysmex XN-9100

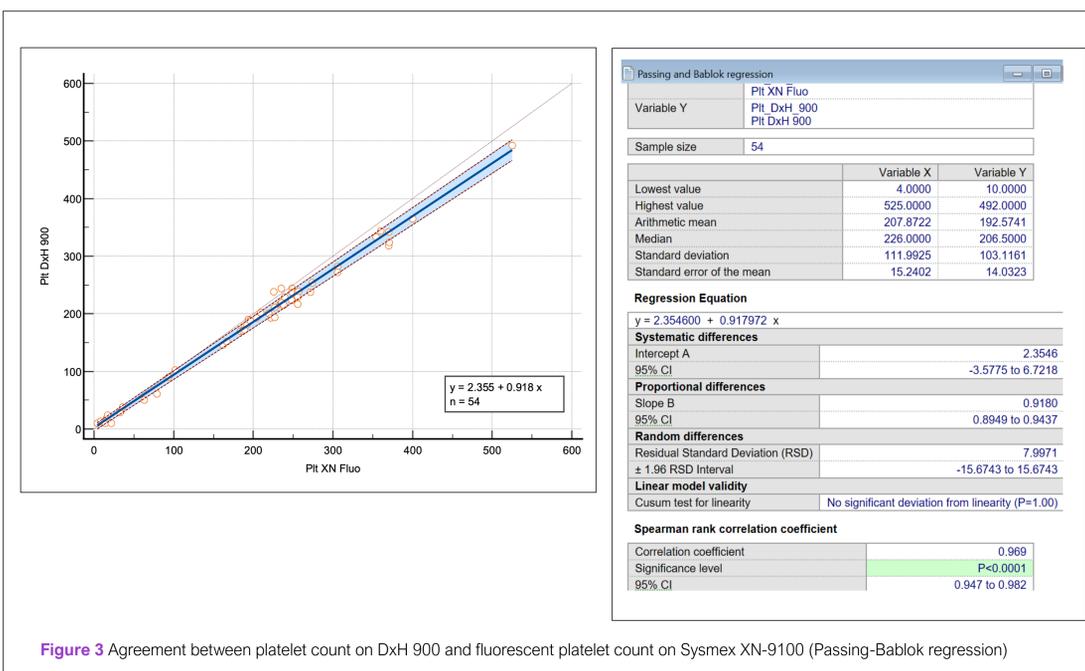


Figure 3 Agreement between platelet count on DxH 900 and fluorescent platelet count on Sysmex XN-9100 (Passing-Bablok regression)

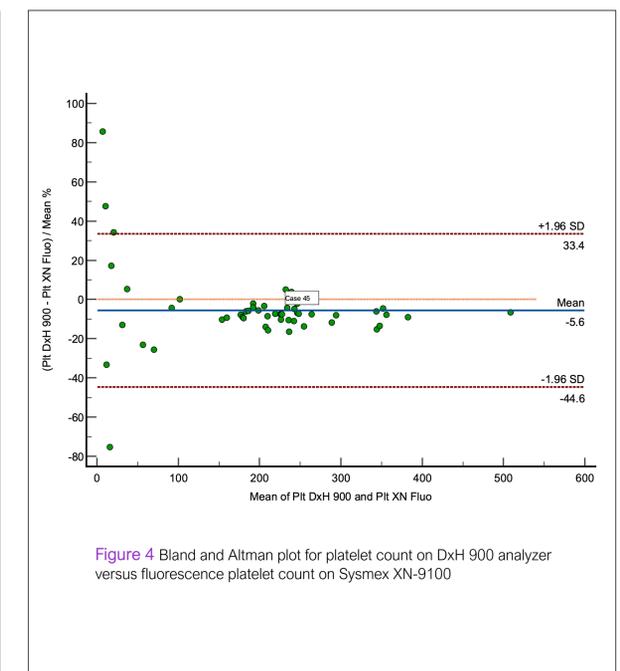


Figure 4 Bland and Altman plot for platelet count on DxH 900 analyzer versus fluorescence platelet count on Sysmex XN-9100