PERFORMANCE EVALUATION OF THE MINDRAY MC-80 DIGITAL CELL MORPHOLOGY ANALYZER AND COMPARISON WITH THE CELLAVISION®DM9600

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BACKGROUND

Mindray MC-80 is an automated system for the acquisition of digital blood cell images and pre-classification of them for validation or reclassification by the clinical pathologist. We evaluated the performance of the MC-80 and compared the results with those obtained using **CellaVision® DM9600**.

METHODS

Accuracy (AR) and detection (DR) rates were calculated as the number of correct cells pre-classified in the MC-80 divided by the total cells pre-classified and post-classified by the expert, respectively. MC-80 and DM9600 pre-classification percentages were compared with the automatic values obtained in the BC-6800Plus. Pre-classification percentages obtained in the MC-80 were compared with respect to those provided by the DM9600. Statistical analyses were performed and p-values <0.01 were considered statistically significant.

RESULTS

AR and DR were above 98.1% and 94.4%, respectively for all normal leucocytes. For the immature granulocytes (IG), AR and DR were 74.2% and 100%, respectively. We did not observe significant differences (Figure 1) when we compared results obtained in MC-80 or DM9600 with those provided by BC-6800Plus, except for subsets with very low frequency in PB: basophils and IG in the MC-80 and eosinophils (pre-classification), basophils and IG in the DM9600, respectively ($p<0.001$).

When comparing percentages of pre-classification with results provided by the BC-6800Plus, MC-80 showed higher values of the correlation coefficient r than DM9600. These values were: 0.90 and 0.87 for neutrophils, 0.90 and 0.87 for lymphocytes, 0.67 and 0.48 for monocytes, 0.77 and 0.75 for eosinophils, 0.37 and 0.27 for basophils and 0.58 and 0.52 for IG, respectively. When comparing MC-80 pre- and post-classification percentages, r values were between 0.91 and 1 for all types of leucocytes. In contrast, when pre and post classification values in DM9600 were considered, basophils and IG showed r values of 0.67.

CONCLUSION

The automatic classification of normal leucocytes obtained in MC-80 showed high accuracies (>98%). Correlation values between pre and post-classification percentages were higher in MC-80. No differences were observed between pre and post-classification values obtained on the MC-80 and DM9600, respectively.

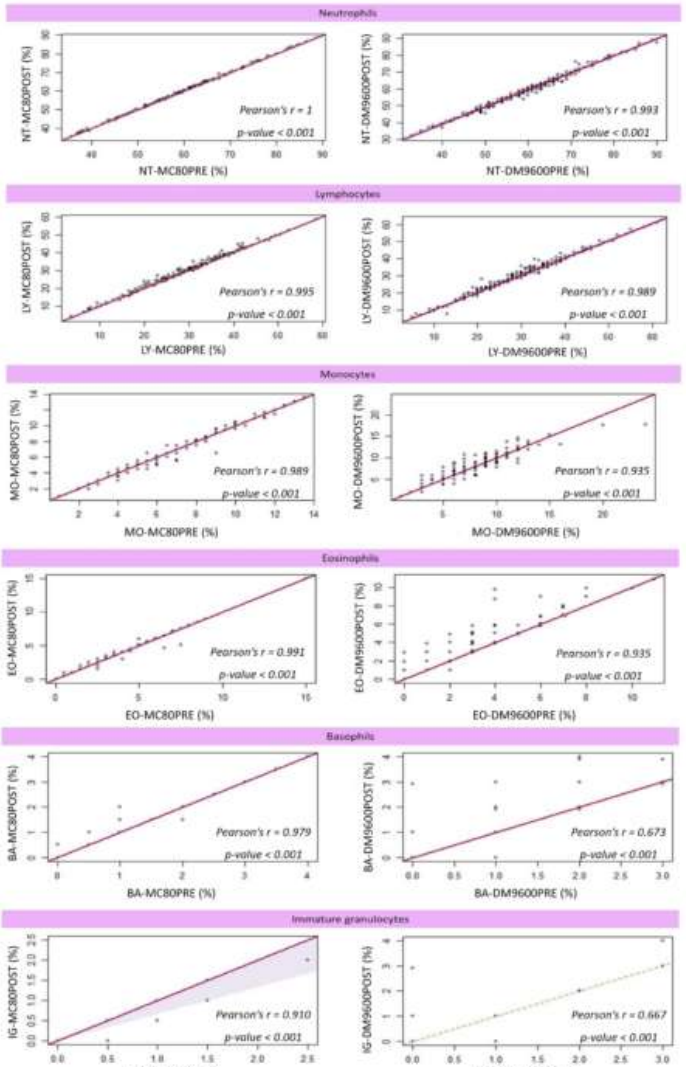

Figure 1. Passing-Bablok regressions and Pearson's correlation r-values obtained in the Mindray MC-80 (**left**) pre- and post-classification (MC80PRE and MC80POST) and CellaVision® DM9600 (**right**) pre- and post-classification (DM9600PRE and DM9600POST).