International Journal of Laboratory Hematology
The Official journal of the International Society for Laboratory Hematology

ORIGINAL ARTICLE INTERNATIONAL JOURNAL OF LABORATORY HEMATOLOGY

Counting of leukocytes in samples from G-CSF mobilized donors, leukapheresis products, and cord blood: the performances of an analyzer with dedicated profiles

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doi:10.1111/j.1751-553X.2011.01373.x

Received 13 March 2011; accepted for publication 11 July 2011

Keywords
stem cell, PBSC transplantation, cord blood stem cells, laboratory practice, leukocytes

SUMMARY

Introduction: Accurate white blood cell counting (WBC) and differential count by blood analyzers could allow a more informative characterization of granulocyte colony-stimulating factor (G-CSF) mobilized blood (MB), leukapheresis products (LP), and cord blood (CB). However, reliable counting by a blood cell analyzer in this setting is a major challenge owing to quali-quantitative abnormalities of blood cells.

Methods: We evaluated the performances of the analyzer Pentra DX 120 by Horiba ABX working with dedicated cell-gating profiles, which generate three-part differential counts in samples obtained from donors' MB, LP, and CB. The results of the analyzer were compared to counts obtained by flow cytometry and manual counts, the latter performed for reference validation and in the case of discrepant results between study and reference counts.

Results: Pentra DX 120 generated highly correlated counts ($R > 0.91$ in all cases) to those obtained by flow cytometry in all samples (MB, LP, and CB) with high degree of count accuracy in most cases and referred to WBC absolute count and differential count including lymphocytes (LYM) %, monocytes (MON) %, and polymorphonuclear leukocytes (PMN) %. Accuracy, judged by the difference between study and reference counts and expressed as percentage of reference count, ranged from 0.8% to 8.6%, and sporadic loss of accuracy occurred for MON % only in no more than 10% of CB samples.

Conclusion: The ABX Pentra DX 120 provided accurate WBC count and differential count during MB, LP, and CB analyses and allowed a better characterization of donors' hematologic status and graft composition.