Customer Information
Literature List – Platelets

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Note: Whether references are given in British or American English depends on the original.

General


What we see as the essence: The PLT-F channel of the XN-Series shows excellent precision and accuracy even in abnormal samples or samples with fragmented red cells, large platelets and low PLT counts when compared to the reference flow cytometric method.

Free online: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215409/

What we see as the essence: PLT-F counts from the XN-Series were more accurate than PLT-O counts from the XE-Series when compared with the CD41/CD61 immunoplatelet reference method.


What we see as the essence: This paper gives a good overview of the technology behind the XE-Series and the benefits of flow cytometry and automatic cell counting. It shows that the XE-5000 delivers faster accurate results than older analysers.

PLT-F


What we see as the essence: A good correlation was found between the XN- and XE-Series for all parameters. The XN-Series dramatically reduced the smear rate (by 58%). Even at counts below 500/µl the XN provided an accurate WBC count using the Low WBC mode.
**Park SH et al. (2014):** The Sysmex XN-2000 Hematology Autoanalyzer Provides a Highly Accurate Platelet Count than the Former Sysmex XE-2100 System Based on Comparison with the CD41/CD61 Immunoplatelet Reference Method of Flow Cytometry. Ann Lab Med. 34(6): 471-4

What we see as the essence: PLT-F counts from the XN-Series were more accurate than PLT-O counts from the XE-Series when compared with the CD41/CD61 immunoplatelet reference method.


What we see as the essence: Compared to PLT-I and PLT-O counts, PLT-F had the best correlation with CD61-immunoplatelet counts. PLT-F counts were not affected by WBC fragments in two acute leukaemia patients or by RBC fragments and microcytes in a burn injury patient.

*http://ajcp.ascpjournals.org/content/140/4/495.abstract*

What we see as the essence: The PLT-F method of the XN-2000 demonstrated excellent reproducibility in samples with low platelet counts. Therefore, it is recommended for making decisions about platelet transfusions.

*http://jcp.bmj.com/content/65/11/1024.abstract* Available from Sysmex upon request.

What we see as the essence: The XN showed reduced sample turnaround time and reduced number of blood film reviews compared to the XE-2100 without loss of sensitivity and with more precise and accurate results for both platelets and low WBC counts.
PLT-O


What we see as the essence: Both IRF% and IPF% can be used to predict neutrophil and platelet recovery, respectively. Work was done on XE-5000.


What we see as the essence: The accuracy of the XE-2100 platelet counting on chemotherapy samples with low counts is excellent when the switching algorithm is used. The optical count is not always the most accurate and the overriding of the algorithm is not good practice.

IPF


What we see as the essence: "Both IPF% and IPF# parameters should become a standard for evaluating the respective pathophysiologies underlying both congenital and acquired thrombocytopenias."

Taha B et al. (2013): Measurement of the absolute immature platelet number reflects marrow production and is not impacted by platelet transfusion. Transfusion 53(6): 1201.

What we see as the essence: Absolute IPF is a good parameter to assess the megakaryocytic activity of the bone marrow in transfusion-dependent thrombocytopenic patients.
http://link.springer.com/article/10.1007%2Fs12185-015-1741-0

What we see as the essence: IPF% from the XN-1000 and RP% obtained by immuno flow cytometry had a comparable diagnostic value for the distinction between controls, immune thrombocytopenia (due to platelet destruction) and aplastic thrombocytopenia.


What we see as the essence: IPF% obtained from the XE-2100 was increased in immune thrombocytopenia patients but not in patients with haematological malignancies. Therefore, IPF% may be used to evaluate the thrombopoietic state of the bone marrow.


What we see as the essence: IPF can be used to monitor the thrombocytopenia in patients with dengue fever. Furthermore it can predict the recovery of PLT and so avoid unnecessary blood transfusions.


What we see as the essence: Both IRF% and IPF% can be used to predict neutrophil and platelet recovery, respectively. Work was done on XE-5000.

Everett TR et al. (2014): Immature platelet fraction analysis demonstrates a difference in thrombopoiesis between normotensive and preeclamptic pregnancies. Thromb Haemost 111(6): 1177  
http://th.schattauer.de/en/contents/archive/issue/1870/manuscript/20753.html

What we see as the essence: The study illustrates the potential utility of IPF as a parameter to distinguish between normotensive and preeclamptic pregnant women. The authors suggest that IPF is a far better parameter than MPV, which has previously been suggested for this purpose, and can distinguish between the two groups even at normal platelet counts.
Quotes: "IPF is a promising predictor of platelet recovery in patients after autologous SCT." "The proposed cut-off value of 5,3% can theoretically be used to decide whether or not to give a platelet transfusion."

What we see as the essence: A clear and concise review of 53 original publications concerning the clinical value of IPF. The diagnostic and prognostic potential of IPF in various conditions, and also advantages and limitations of IPF are described.

What we see as the essence: The purpose of the review is to assess the suitability of the IPF% as a routine test. Productivity rather than clinical value is discussed. Reference ranges are given.

Free online: http://dx.doi.org/10.1160/TH12-09-0709
What we see as the essence: Reticulated (immature) platelets may be independent predictors of cardiovascular death and may potentially be useful in improving risk stratification for acute coronary syndrome patients.

http://www.nature.com/jp/journal/vaop/ncurrent/full/jp201321a.html
What we see as the essence: Low absolute IPF values during the course of neonatal sepsis/necrotizing enterocolitis suggest suppression of megakaryopoietic activity.

What we see as the essence: The study provides reference intervals for PLT, IPF% and absolute IPF from more than 2000 healthy individuals and from umbilical cord blood, according to the CLSI guideline. These results could be used as fundamental data for clinical use as well as future researches.

Free online: http://bloodjournal.hematologylibrary.org/cgi/pmidlookup?view=long&pmid=22294727

What we see as the essence: IPF% was higher in patients with ITP than the controls, reflecting the increased platelet production. Treatment with eltrombopag led to increased platelet counts, platelet size, and absolute IPF, but no significant change in IPF%.

Funck-Jensen K et al. (2013): Increased platelet aggregation and turnover in the acute phase of ST-elevation myocardial infarction. Platelets 24(7): 528-537.

What we see as the essence: Increased platelet turnover, indicated by IPF and MPV, was observed in the acute phase of ST-elevated myocardial infarction and may partly explain reduced efficacy of oral antiplatelet drugs.

Free online: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3278260/pdf/ott-5-001.pdf

What we see as the essence: Using IPF-rich platelet transfusions reduces the number of transfusions and bleedings after stem cell transplantation in paediatric patients.


What we see as the essence: IPF% can support the differentiation between platelet destruction and bone marrow failure in hepatitis C patients.
*Free online:* [http://bloodjournal.hematologylibrary.org/content/117/21/5723.full.pdf+html](http://bloodjournal.hematologylibrary.org/content/117/21/5723.full.pdf+html)

What we see as the essence: The absolute immature platelet count (IPF#) can be used to assess the effect of different treatments of immune thrombocytopenia and could in such cases be more useful than IPF%.


What we see as the essence: The immaturity fractions IPF and IRF offer an easy and early evaluation method of posttransplantational recovery of the bone marrow.

[http://dx.doi.org/10.1160/TH10-02-0124](http://dx.doi.org/10.1160/TH10-02-0124)

What we see as the essence: Renal transplant recipients showed significantly higher values of reticulated platelets (IPF) than healthy control subjects, especially in those not on aspirin treatment. An elevated IPF% could be an additional hint for a mechanism involved in the increased cardiovascular risk profile of those patients.


What we see as the essence: An IPF% of above 10% is a useful marker for predicting the timing of platelet recovery after chemotherapy and haematopoietic stem cell transplantation and has the potential to facilitate optimal platelet transfusion.


What we see as the essence: If the IPF is high, thrombocytopenic neonates are likely to recover on their own.
Free online: http://www.nature.com/bmt/journal/v39/n8/pdf/1705623a.pdf

What we see as the essence: IPF counting can provide an accessible marker of engraftment after transplantation, especially of thrombopoietic activity.


What we see as the essence: The results show that the IPF reflects the pathology of thrombocytopenic disorders (i.e. consumptive versus productive). Measurement of the IPF is useful for the differential diagnosis and analysis of platelet kinetics and significantly more so than the mean platelet volume (MPV).


What we see as the essence: The automated IPF is a useful parameter in the clinical evaluation of the thrombocytopenic patient and has the potential to allow optimal transfusion of platelet concentrates.

Free online: http://ajcp.ascpjournals.org/content/125/2/282.long

What we see as the essence: The IPF (here named HFPF for 'high fluorescence platelet fraction') was predictive in the evaluation of thrombocytopenia. An elevated IPF is found with increased platelet production, particularly associated with platelet destruction, and in disorders associated with decreased platelet production the IPF is normal.


What we see as the essence: Automated IPF% measurement should become a standard parameter in evaluating the thrombocytopenic patient.