

Readout

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Defining the Reticulocyte Analysis: The VEGA Retic

(Pages 16-18)

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Defining the Reticulocyte Analysis : The VEGA Retic



Anemia is the most frequent pathological circumstance encountered in the practice of Hematology. The various tools aiming at the etiological diagnosis of anemia are based on precise rules. One of these rules recommend the reticulocyte count as the first line parameter for the diagnosis of non microcytic anemia.

Reticulocyte counting with the manual method is still the reference method, but is time - consuming and rather imprecise in practice, mainly due to the difficult visual recognition of reticulocytes and despite the NCCLS recommendations [1] for the reticulocyte counting. This explains why new fully - automated techniques, combining particle sizing (blood cell volume) along with fluorescence technology (RNA content) are delivered on the market.

The best top level cell counter would then include the following analytical capabilities : complete blood cell count, leukocyte differential and reticulocyte analysis in a fully - automated mode.

Since May 1997, ABX VEGA Retic fulfill these criteria, allowing the worldwide laboratories to improve their diagnostic efficiency.

網状赤血球計測機能付 自動血球計数装置(VEGA Reticle)

網状赤血球検査は非小球性貧血の最も重要な診断項目である。ABXは、煩雑で、精度に欠ける用手法に代わり、粒度分布測定法と蛍光分析法とを組み合わせ、血球計数、白血球の差分計数、網状赤血球分析の全てが可能で完全自動網状赤血球計数装置 VEGA Retic を開発した。

<測定原理>

本装置は網状赤血球分析法として最も定評ある次の分析法を採用している。

- ・核酸(染料)による着色
- ・開口部におけるインピ - ダンスによる容積の測定
- ・蛍光強度定量化法による赤血球のRNA含量の測定
- ・核酸 - 染料としてチオゾ - ルオレンジを適用
- ・ダブル流体力学的連続法(DHSS)を採用
- ・網状赤血球パラメタを広げた

<評価>

米国臨床検査協議会(NCCLS)の推奨を受けて大学病院での評価結果は、感度、精度ともに良好である。また、用手法(New Methylene Blue)や、フローサイトメトリ法を使った他社製品の測定結果とも良く一致している。

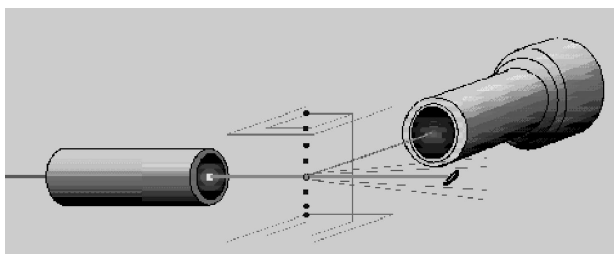
Analytical principle of the VEGA Retic

The VEGA Retic uses the most recognized techniques to analyse reticulocytes. Three methods are sequentially applied to each cell :

1. Staining with a nucleic acid - specific dye,
2. Volume determination using aperture impedance,
3. Erythrocyte RNA content measurement using fluorescence intensity quantification.

However, the VEGA Retic associates some new technological and analytical improvements for the fully - automated reticulocyte analysis :

1. Use of the most referenced nucleic - acid dye : Thiazole Orange,
2. Use of the Double Hydrodynamic Sequential System or D.H.S.S.



3. A broad range of reticulocyte parameters :
 - Reticulocyte count in absolute count (RET# G/L) and percentage (RET%)
 - Corrected Reticulocyte Count (CRC%), a reticulocyte parameter taking in account the intensity of anemia of the reticulocyte count interpretation [2],
 - Reticulocyte Maturation Classes (RETH, RETM and RETL in % and ratios), which are very useful parameters for the follow-up of specific treatments such as Erythropoietin therapy or Hematopoietic Stem Cell Transplantation [3],
 - Mean Fluorescence Index (MFI%), a parameter similar to Dr. Bruce Davis's RMI [4] that quantifies the fluorescence intensity of reticulocytes, whatever the number of reticulocytes to be counted.

Evaluation of the VEGA Retic

The results of the first evaluations by University Hospitals (following NCCLS recommendations) are good and demonstrate a good linearity and sensitivity (going to RET# values below 20G/L, $r = 0.95$) and a good precision.

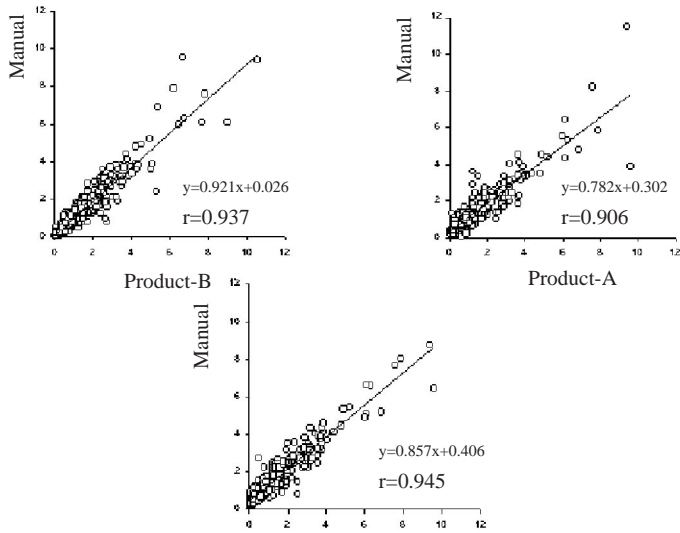
Within - run imprecision (three different samples ; 18 runs per sample).

		Reticulocytes	MFI	Ret L	Ret M	Ret H
		%				
Low value	mean	0.33	13.13	87.12	8.52	4.35
	CV%	12.79	22.19	5.97	52.54	81.47
Medium value	mean	2.13	22.79	73.96	18.97	7.07
	CV%	9.42	15.89	7.86	18.77	48.10
High value	mean	3.22	25.58	69.57	21.79	8.64
	CV%	4.79	11.16	7.02	13.01	27.83

The agreement with manual methods (New Methylene Blue), and other two company's (product-A & product-B) using classical fluoro - flow cytometry are very good .

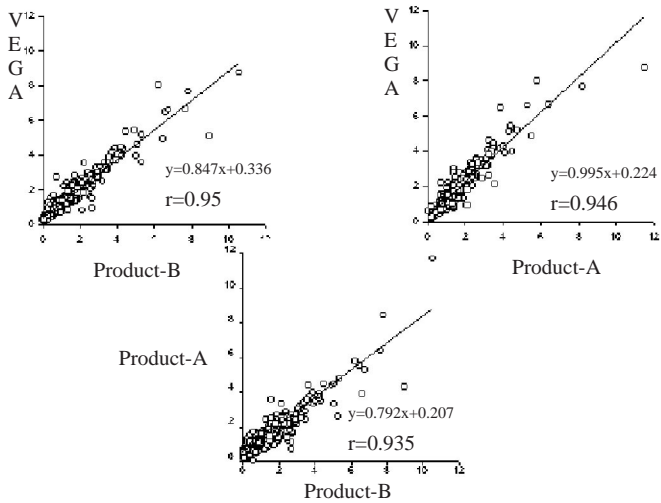
These data confirm the good intrinsic performances of the VEGA Retic as well as its excellent analytical capabilities. Clinical evaluations of the VEGA Retic are currently undertaken to demonstrate its performances in the clinical daily practice.

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VEGA

Correlation studies between the manual method (NMB), product-A, product-B and the VEGA Retic for RET%.



Correlation studies between the VEGA Retic and product-A, VEGA Retic and product-B, and product-A with product-B.

