YHLO

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VISION ESR Analyzers

Redefine ESR Analysis

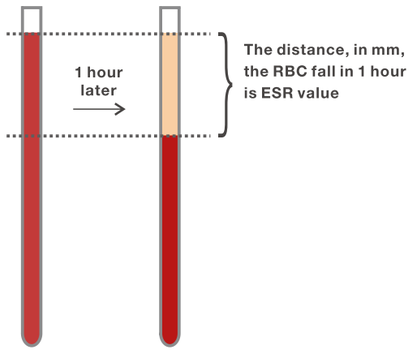
Erythrocyte Sedimentation Rate (ESR)

Mechanisms and Clinical Significance of ESR

ESR is the measure of ability of erythrocytes (red blood cell) to fall through the blood plasma and accumulate together at the base of container in one hour.[1] The faster the red blood cells have descended, the greater the inflammatory response of your immune system. ESR is a blood test that can reveal inflammatory activity in your body. Although ESR is not a stand-alone diagnostic tool, it can help your doctor diagnose or monitor the progress of an inflammatory disease.[2] The Westergren method was selected as the reference method. [3][4]

ESR test is most often used if the doctor suspects the patients have:[5]

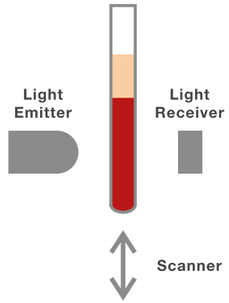
- Giant cell arteritis
- Polymyalgia rheumatica
- Rheumatoid arthritis



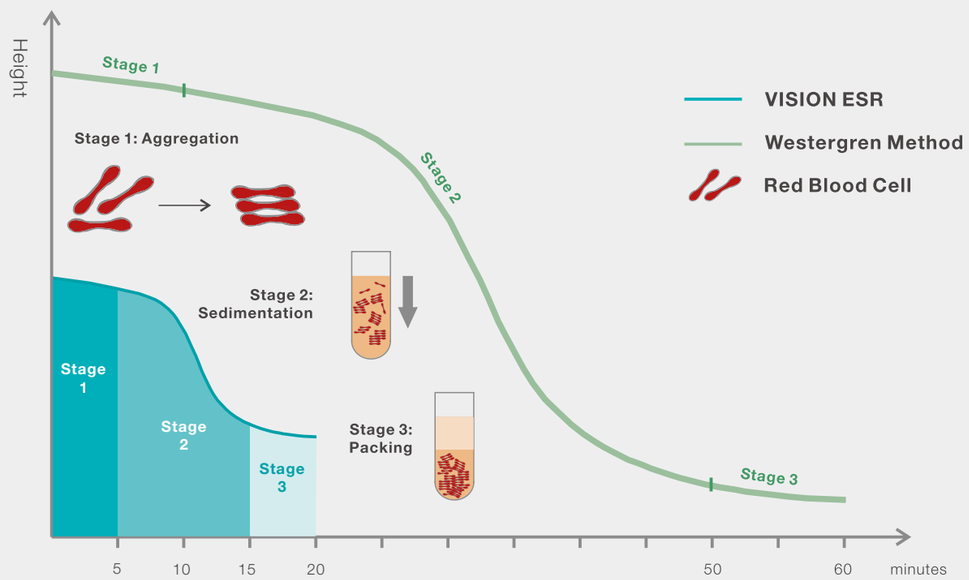
VISION Principle-Infrared Emitting and Receiving Technology

In order to obtain accurate ESR value, the measurement of the exact sedimentation rate is recommended. VISION's innovative technology of infrared emitting and receiving makes it possible to monitor the three stages of ESR and calculate the real ESR, which has an excellent correlation with Westergren method.

The optical components (Infrared LED, emitter and receiver) move up and down along the EDTA tubes, collecting data every 10 seconds. Through the light signal changes, VISION measures the slope or the speed (=mm/time) every 10 seconds a total of 20 minutes. The built-in algorithm is used to calculate the ESR according to the Westergren Method.



Three Stages of Erythrocyte Sedimentation



There are 3 stages in erythrocyte sedimentation: [6]

- **Stage 1: Aggregation - rouleaux formation**
- **Stage 2: Sedimentation - settling stage**
- **Stage 3: Packing - sedimentation slows and cells start to pack at the bottom of the tube**

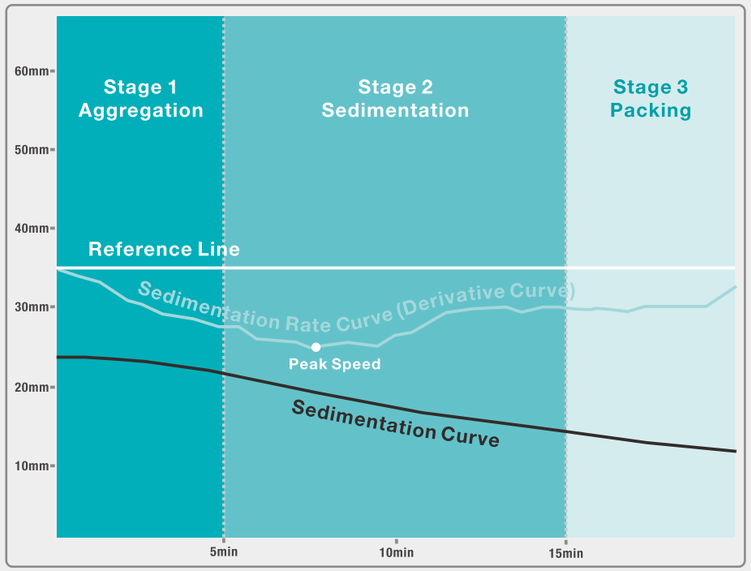
The three stages spend 60 minutes in Westergren Method, while only 20 minutes in EDTA tubes.

VISION ESR Analyzer series use primary EDTA tubes directly. The test principle is infrared emitting and receiving technology, which can monitor the real three stages and provide the dynamic sedimentation curve.

Note: There is a number of ESR systems claiming the possibility to provide the ESR result via the detection of the aggregation of red blood cells alone without measuring ESR. Obviously, aggregation alone can't present the whole ESR phenomenon.

VISION ESR Analyzers

Redefine ESR Analysis



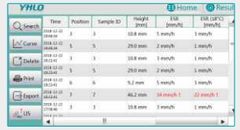
Unique real time ESR curve display can be used for clinical research

Simple and Efficient Workflow

Cycle Mode

Scan and load samples, automatic mixing

Start running



Result

Random Mode

Mix the samples manually

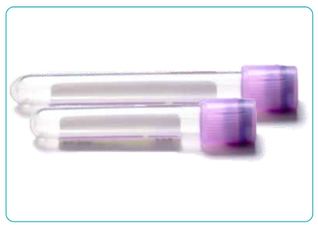
Scan and load samples

Start running

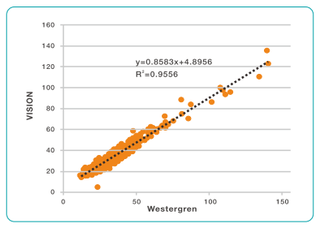
Result

How to Redefine ESR Analysis

VISION series are US / Italy / Germany / Turkey / China patented



Use of primary EDTA tubes
- Different types of EDTA tubes compatible
- Diameter 12/13mm, sample volume 1.5-3.5mL



Results available in 20 minutes with excellent Westergren correlation

Provide assigned value and L-J chart of Bio-Rad control

Temperature corrected ESR result

Master dongle can allocate test number to Secondary dongle freely

The Characteristics of VISION & VISION Pro

Items	VISION Pro	VISION
Model	VISION Pro-A (8 tubes) VISION Pro-B (16 tubes) VISION Pro-C (32 tubes)	VISION-A (8 tubes) VISION-B (16 tubes) VISION-C (32 tubes)
PC	Internal LCD touch Screen	External PC
Operation system	Linux system	Windows
Printer	Internal thermal printer	Support external printer
Barcode reader	Internal barcode scanner	Support external barcode reader
LIS communication	HL7	TCP/IP
Language	Chinese, English, Turkish, Spanish	Chinese, English, Turkish, French, Italian
Test dongle	VISION Pro Master Dongle VISION Pro Secondary dongle	VISION Master Dongle VISION Secondary Dongle
Dimension	352mm X 365mm X 325mm	350mm X 300mm X 300mm
Weight	11.5 kg (VISION Pro-A) 12 kg (VISION Pro-B) 12.5 kg (VISION Pro-C)	8 kg (VISION-A) 8.5 kg (VISION-B) 9 kg (VISION-C)

Comparison between Westergren Method and VISION

Procedure	Westergren Method	VISION ESR Analyzer
Tools required	Tube holder, disposal Westergren tube, timer	N/A
Sample type	2ml in ESR tube (black cap)	2ml in EDTA tube (purple cap)
Time of test	Within 2 hours after blood drawn	Within 2 hours after blood drawn
Temperature of test	18 to 25 °C	18 to 25 °C
Sample mixing	At least 12 complete inversions	Cycle mode, mixing automatically
Time to result	60 minutes	20 minutes

Dongle Design

Dongle Type	Colour	Test Times
Master Dongle	Orange	10000/20000/50000
Secondary Dongle	White	Blank
Master Dongle	Orange	10000/20000/50000
Secondary Dongle	White	Blank

Reference:
[1] Harrison M (June 2015). "Erythrocyte sedimentation rate and C-reactive protein".Australian Prescriber. 38 (3): 93–4
[2] http://medifitbiologicals.com/esr/
[3] Bull BS, Brecher G. An evaluation of the relative merits of the Wintrobe and Westergren sedimentation methods, including hematocrit correction. Am J Clin Pathol. 1974;62:502 - 510.
[4] Moseley DL, Bull BS. A comparison of the Wintrobe, the Westergren and the ZSR erythrocyte sedimentation rate (ESR) methods to a candidate reference method. Clin Lab Haematol. 1982;4:169 - 178.
[5] Eastham, R. D (1954). "The Erythrocyte Sedimentation Rate and the Plasma Viscosity".Journal of Clinical Pathology. 7 (2):164–167.doi:10.1136/jcp.7.2.164
[6] National Institute of Open Schooling, India. Retrieved 8 April 2018.