

Determination of Erythrocyte Sedimentation Rate

Experiment 12 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To observe a Westergren-type ESR demonstration and report sedimentation with method, time and units.

Principle

ESR describes red-cell settling under standardised conditions and is commonly expressed in mm at one hour. Increased plasma proteins can promote red-cell aggregation, but anaemia, cell shape and other factors also affect sedimentation. ESR is a non-specific finding and does not identify one disease by itself.

Requirements

- Westergren-type system and its instructions, vertical stand and timer.
- Instructor-provided anticoagulated material or a simulated reading.
- Temperature and observation record.

Procedure

1. Confirm method

Record the tube or instrument type, required anticoagulant and any prescribed dilution. Use the method-specific preparation rather than assuming one dilution for every system.

2. Observe filling

The instructor fills to the stated mark without bubbles or clot. Note that a correct initial level is required.

3. Set vertically

Place the tube upright in a stable stand, protected from vibration and unsuitable temperature conditions. Start timing as prescribed.

4. Read

At the stated endpoint, usually one hour for the classical method, read the clear-plasma column above the red cells in millimetres.

5. Interpret

Report method and interval and compare with the supplied laboratory range. Discuss non-specificity and confounding factors.

Human Anatomy and Physiology

Observations and Record

Item	Required record	Observation
Method / temperature	System and room condition	_____
Start / reading time	___ / ___	_____
Sedimentation	Clear-plasma column	___ mm at 1 h

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Illustrative classical reading: clear-plasma column 18 mm after one hour. Report ESR = 18 mm at 1 h under the stated method.
- Do not divide a 30-minute observation into a guessed one-hour result: sedimentation is not assumed to be a simple linear process.

Result

ESR by ___ method = ___ mm at ___ h. The measurement conditions and interpretive limitations are recorded.

Precautions

- Keep the tube vertical and the timing consistent.
- Clots, bubbles, vibration or an incorrect fill level can invalidate the reading.
- Do not use ESR alone to diagnose infection, autoimmune disease or malignancy.

Viva Questions and Answers

1. What is read in the classical test?

The height of clear plasma above the settled red cells at the stated time.

2. Why can tube tilt matter?

It changes the sedimentation conditions and can distort the measurement.

3. Why is ESR non-specific?

Many inflammatory and non-inflammatory factors can change it.

Continue Learning with FirstHope

Complete Notes on the FirstHope App

Complete subject and semesters are available on FirstHope app only.

- Get complete subject and semester notes in the FirstHope app.
- Available for B.Pharm, D.Pharm, M.Pharm and Pharm.D students.

[Click here to get the FirstHope app](#)

Join the FirstHope Telegram Channel

Join FirstHope Notes and keep up with channel updates.

[Click here to join Telegram](#)

Instagram

@firsthope.official

[Click here to follow Instagram](#)

YouTube Channel

FirstHope-Pharmacy / Live streams

[Click here to watch the YouTube channel](#)

WhatsApp Channel

Follow FirstHope on WhatsApp.

[Click here to join the WhatsApp channel](#)

FirstHope Website

firsthopenotes.com

[Click here to visit the website](#)