

ESTIMATION OF ERYTHROCYTE SEDIMENTATION RATE (ESR)

Background:

ESR is the rate at which erythrocytes sediment on their own weight when anticoagulated blood is held in a vertical column, it is expressed as the fall of RBC's in mm at the end of first hour (starting point when the tube or pipette was filled with blood).

The ESR is measured in terms of millimeter per hour. The values of sedimentation rate varies from method to method used for their determination because it is dependent upon the length and diameter of the tube which are variable from method to method.

Normal Values according to Westergren's Method:

- Males- 0 to 5mm at the end of 1st hour.
- Females- 0 to 7 mm at the end of 1st hour

The ESR is estimated by three different methods :

- 1) Westergren's Method
- 2) Wintrobe's Method
- 3) Cutler's Method

Westergren's method is one of the most suitable methods for laboratory purpose. This method is better method than Wintrobe's since the reading obtained is magnified as the column is lengthier.

Significance: ESR is useful in diagnosis of many diseases though it is not specific for any particular disease. The increment in sedimentation rate is observed in conditions like rheumatic fever and arthritis, pneumonia, nephritis, cancer, syphilis, anaemia, menstruation, tuberculosis and leukemia.

The aim of the experiment is to estimate the erythrocyte sedimentation rate of a given blood sample with the help of Westergren's method.

APPARATUS REQUIRED:

Spirit, cotton, syringe, Westergren's ESR pipette

METHOD:*Westergren's Method*

- 1) Westergren's pipette (open at both ends) is about 30 cm long with a bore diameter of about 2.5mm.
- 2) The lower 20cm are marked from 0 (top) to 200 (bottom).
- 3) Anticoagulant used is 3.8% trisodium citrate solution. One part of anticoagulant is added to four parts of blood.
- 4) The pipette accepts about 1ml of blood. Fill the pipette by sucking till the 0 mark and clamp it vertically in the Westergren rack.
- 5) Read the upper level of red cells exactly after 1 hour.

REPORT: The ESR of the given blood sample was found to be _____

REFERENCE:

1. Haematology, Practical Human Anatomy And Physiology, S.R. Kale et al., Nirali Prakashan, Eight Edition, 2002, pp. 28