Packed Cell Volume of Whole Blood

(PCV)

Hematocrit is defined as the volume occupied by erythrocytes in a given volume of blood and is usually expressed as a percentage of the volume of the whole blood sample.

Normal ranges

Newborn 53-65% ٪65-53

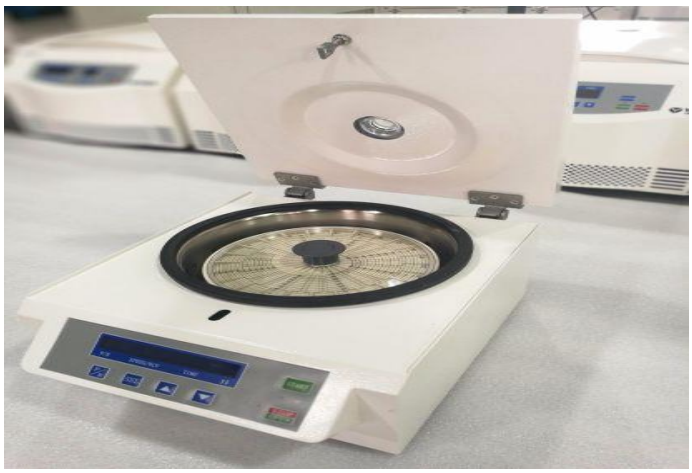
Infant/child 30-43% ٪43-30

Adult male 42-52% ٪52

Adult female 37-47%

Reagents and equipment:

- Capillary tubes, heparinized for finger sticks (red tip) or plain for anticoagulated blood (blue tip)
- Clay-type tube sealant
- Micro-hematocrit centrifuge
- Micro-hematocrit reader
- Micro-hematocrit
- Kimwipes or gauze



Procedure

1. Fill two capillary tubes approximately three quarters full with blood anti-coagulated with EDTA or heparin. Alternatively, blood for heparinized capillary tubes may be collected by capillary puncture. Wipe any excess blood from the outside of the tube.
2. Seal the end of the tube with the colored ring with nonabsorbent clay.
3. Balance the tubes in the centrifuge with the clay ends facing the outside away from the center, touching the rubber gasket.
4. Tighten the head cover on the centrifuge and close the top. Activate the centrifuge for 5 minutes between 10,000 and 15,000 rpm (see comments). Do not use the brake to stop the centrifuge.
5. Determine the HCT by using a micro-hematocrit reading device Read the level of RBC packing; do not include the buffy coat (leukocytes and platelets when reading.
6. The values of the two Hcts should agree within 2% (0.02).

Factors that affect the result

- Improper sealing of the capillary tube causes a decreased Hct reading as a result of loss of blood during centrifugation. a higher number of erythrocytes are lost in relation to the plasma.
- The time and speed of the centrifugation and the time when the results are read are very important. Insufficient centrifugation. Time for complete packing should be determined for each centrifuge and rechecked at regular intervals.
- A number of disorders such as
  - Sickle cell anemia
  - Macrocytic anemia
  - Thalassemia
  - Spherocytosis
  - Hypochromic anemia's