

Information for the preanalytical handling of EDTA Tubes

1 Recommended order-of-draw

The following order-of-draw is recommended when drawing multiple specimens for clinical laboratory testing during a single venipuncture. The order of draw is conform to the NCCLS standard H3-A5 -Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard-Fifth Edition.

- 1 Blood culture
- 2 Coagulation*
- 3 Serum with and without gel
- 4 Heparin with and without gel
- 5 EDTA**
- 6 Glucose
- 7 Others

*When drawn first then only suitable for routine tests (i.e. PT and aPTT)

NOTE: In cases where blood culture tubes are not required, GBO recommends no-additive tubes.

NOTE: Always follow your facility's protocol for order of draw.

2 Tube filling

Allow the EDTA tube to fill until the vacuum is exhausted and blood ceases. This will ensure there is a correct ratio of blood to EDTA. If a EDTA tube is drawn to one-half of its nominal volume, the effective concentration of EDTA would be unsuitable for preparation of a peripheral blood smear intended for white blood cell differential count.

3 Tube mixing



The recommended number of tube inversions is conform with the NCCLS standard H3-A5 - Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard-Fifth Edition.

Directly after blood collection thorough mixing of the venous blood with the EDTA K2 or EDTA K3 must be achieved by inverting the tube **8-10 times** without shaking.

Turn the filled tube upside-down and return it to upright position. This is one complete inversion. Inadequate or delayed mixing may result in clotting and/or incorrect test results.

Solely relying on the force of blood flow during collection is inadequate for achieving satisfactory mixing.

4 Storage

Because of the variations between newer automated instruments, including reagents, it has been recommended that the EDTA anticoagulated blood be analysed as soon as possible after collection.

EDTA whole blood samples can be stored at room temperature (22-25°C) corresponding to recommendations for stability for the various parameters.

Erythrocytes, leukocytes and thrombocytes in an EDTA anticoagulated blood sample remain stable for up to 24 hours.

The blood smear should be prepared within 1-2 hours of blood collection.

5 Special aspects

Pseudothrombocytopenia: Platelet clumping or agglutination, and platelets adhering to neutrophils are sometimes observed with EDTA anticoagulated blood, such changes becoming progressive with the time elapsed after collection. This problem can be recognized by examination of the peripheral blood smear, and also by being alerted by alarms in the instrument. Accurate platelet counts can be obtained by collecting blood with citrate solution (9NC) as the anticoagulant.

6 Analysis

After blood collection samples may be transferred directly to the analyser. Ideally, the analyser needle takes the analytical sample by piercing the closed safety cap. In most laboratories, however, the safety cap has to be removed and the samples distributed. To prevent evaporation, this should be done shortly before analysis.

Wear gloves during venipuncture and when handling blood collection tubes to minimize exposure hazard.