

Laboratory testing in HAE and AAE: sample handling

Blood sampling and handling are crucial for accurate laboratory measurements. Most antigenic assays used for the measurement of C1 inhibitor, C4 and C1q protein levels require serum samples but may also be performed on citrated plasma. C1 inhibitor functional assays typically used in Canada require citrated plasma but may require serum in some cases. As maintenance of C1 inhibitor function can be compromised by improper blood handling, the following procedures are recommended. **In every case, blood samples must be handled immediately or very soon after collection.**

Serum:

1. Draw 7ml of blood into a red-top blood collection tube.
2. Allow clot to completely form at room temperature for 20 minutes to one hour.
3. Centrifuge at 2500g for 5 minutes at room temperature.
4. Collect serum and dispense into 500µl aliquots in 1-2ml cryogenic vials with screw caps.
5. Freeze rapidly by placing in close contact with dry ice.
6. Once frozen solid, store at -70°C or -80°C .

Citrated plasma:

1. Draw blood into a 4.5ml light blue-top blood collection tube (coagulation tube).
Note: A proper blood: anticoagulant ratio must be met for accurate laboratory determinations. Therefore, blood collection tubes must be filled with indicated volume of blood, no less.
2. Immediately or very soon after collection, centrifuge at room temperature for 10 minutes at 2500g.
Note: If there is a delay between blood collection and handling, place blood on wet ice and perform each centrifugation step at 4°C in a refrigerated centrifuge.
3. Collect plasma, dispense into a different centrifugation tube and centrifuge at room temperature for 10 minutes at 2500g.
4. Collect plasma and dispense into 500µl aliquots in 1-2ml cryogenic vials with screw caps.
5. Freeze rapidly by placing in close contact with dry ice.
6. Once frozen solid, store at -70°C or -80°C .

These blood handling recommendations were adapted to meet general equipment availability in many clinics and centers. In addition, for those centers and clinics without access to dry ice and a -70°C freezer, serum and plasma

samples can be frozen and briefly stored at -20°C . In this case, samples should be sent rapidly to the diagnostic laboratory.

Shipment:

Serum and/or plasma samples, depending on laboratory requirements, should ideally be shipped in insulated boxes containing a sufficient amount of dry ice. For those centers freezing samples at -20°C and without access to dry ice, samples can be shipped in close contact with frozen ice packs into insulated boxes. However, shipment to the laboratory must be rapid. Shipment delays under these conditions are unacceptable, therefore not applicable to transportation over long distances.

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