

# IONISED CALCIUM

**SAMPLE REQUIRED:**  
Serum (1.5 mL) Fresh or Frozen

**BLOOD TUBE REQUIRED:**  
Gel (Serum Separator) vacutainer or  
Plain (Red Top) Tube

Note: Ionised calcium concentrations are very sensitive to changes in sample pH. It is therefore recommended that, wherever possible, ionised calcium concentrations are assessed immediately at the time of collection (e.g using an I-Stat). If this is not possible, the protocol below should be strictly followed.

## INDICATIONS:

- Further assessment of high or low serum total calcium concentration.

## COLLECTION PROTOCOL:

- A 12 hour fast prior to sample collection is preferable but usually not essential.
- Blood sample must be collected and **processed anaerobically** as described below.
- Jugular venipuncture is preferred as application of a tourniquet and subsequent blood stasis may alter serum ionised calcium.

### If using gel (serum separator) vacutainer

- Whole blood sample (of at least 2.5 mls) should be placed (without uncapping lid) in the vacutainer tube and once clotted, the sample should be centrifuged within 10-15 minutes of collection to prevent calcium leaking into serum from the erythrocytes.
- Make sure that the SST sample **tube is not uncapped at any stage.**
- If samples are to be delayed in transit (> 6 hours), then **wrap the SST sample (after having centrifuged the sample) in "glad-wrap"** and place in a specimen collection bag on ice bricks. This will allow satisfactory testing of sample for up to 24 hours. Testing may be performed on samples up to 48 hours old but a reduction of ionised calcium levels of up to 10% may be experienced in samples which are assayed 1- 2 days after collection.

### If using plain (red top) vacutainer

- Collect at least 3-5 mL blood directly into a plain (red top) vacutainer.
- Allow the blood to clot at room temperature (15-30 minutes).
- Centrifuge the sample and harvest the serum anaerobically as follows:
  - Using an evacuated syringe and needle, pierce through the cap of the vacutainer. Aspirate the serum, taking great care to avoid aspirating red cells.
  - Transfer the harvested serum into a second plain (red top) vacutainer, inserting the needle through the cap of the tube.
  - The tubes should not be uncapped under any circumstances.
- Ideally obtain two separate 1.5 mL aliquots of serum.
- Serum should be transported to the laboratory as soon as possible (ideally arriving at the laboratory within 48 hours). If a longer delay is anticipated then the serum should be frozen and transported to the laboratory on dry ice (contact the laboratory to arrange special collection).
- On the laboratory submission form, write the venipuncture site.

Serum should be harvested within one hour of blood collection. Delayed harvesting can lead to a falsely increased ionised calcium concentration.