

Cryoproteins

Synonyms

Cryoglobulins, immune complexes, cryofibrinogen.

Clinical Indication

Cryoproteins are proteins which form a precipitate on cooling the serum or plasma and re-dissolve when warmed to 37°C. Cryoglobulins are either immunoglobulins or a mixture of immunoglobulins and complement components. Cryofibrinogen refers to the precipitate from plasma only.

The diagnosis of a cryoglobulinaemia syndrome should be suspected in patients presenting with arthralgia, purpura, skin ulcers, glomerulonephritis, and peripheral neuropathy. The index of suspicion for cryoglobulinemia should be raised further if these occur in the setting of a chronic viral hepatitis (especially hepatitis C virus [HCV]), a monoclonal gammopathy (e.g. multiple myeloma, Waldenström macroglobulinaemia, monoclonal gammopathy of undetermined significance [MGUS]), or connective tissue disease (e.g. systemic lupus erythematosus [SLE], Sjögren's syndrome).

Full clinical details must be provided to support the request for cryoprotein analysis. If complement C4 and IgM concentrations are normal, rheumatoid factor is negative, no paraprotein is detected and no relevant clinical details are provided, samples may not be referred and further information to support analysis will be requested.

Part of Profile / See Also

Request Form

Combined Pathology manual blood form or ICE request

Availability / Frequency of Analysis

Referred Test: Analysed at the Protein Reference Unit, St Georges Hospital, London if specific criteria met. 9745

[Minimum retesting interval is 2 months.](#)

Turnaround Time

Three weeks

Patient Preparation

[Due to the temperature sensitive nature of the test, samples must be collected at the hospital sites only. An insulated flask is required for this process and must be collected from the laboratory prior to sample collection.](#)

Samples that are not collected within 30 minutes will not be processed.

Sample Requirements

Specimen Type

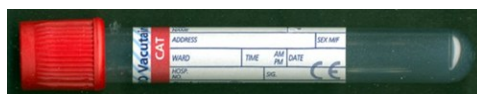
Serum and Plasma

Volume

3 ml

Container

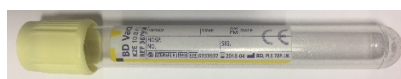
Pre-warmed red top (plain) tube



and



pre-warmed purple top (EDTA) tube or



pre-warmed lemon top (EDTA) tube

Plus an additional yellow top (SST) tube at room temperature for complement C3/C4 and rheumatoid factor:



Patients must only be bled at Southend or Basildon Hospital.

The protocol:

1. Samples should be collected into pre-warmed tubes at 37C and brought to the laboratory at 37C in the warm flask. Please take the gold top SST sample first to warm the needle and hub ready for the cryoprotein samples (then take the red sample followed by purple sample).
2. The plain (Red) and EDTA (purple/lemon) samples should be put into the incubator and allowed to clot at 37C for at least 1 hour.
3. The samples should then be centrifuged at 37C in the prewarmed centrifuge.
4. The plasma and serum samples should then be separated into 2 tubes and kept in the incubator at 37C until they are packaged for referral. Ensure the sample type is clearly written on each sample.
5. Requests that meet the criteria will be referred for analysis the next day.

Reference Range & Units

Interferences

If the sample is not kept warm prior to separation, this can result in a false negative results.

Interpretation & Clinical Decision Value (if applicable)

Full interpretive report is provided by the referral laboratory. In type I cryoglobulinemia, the cryoglobulins are monoclonal immunoglobulins, typically IgG or IgM, and less commonly IgA or free Ig light chains. In type II cryoglobulinemia, the cryoglobulins are composed of a mixture of a monoclonal IgM (or IgG or IgA) with rheumatoid factor (RF) activity and polyclonal Ig. In type III cryoglobulinemia, the cryoglobulins are composed of a mixture of polyclonal IgG (all isotypes) and polyclonal IgM.

References

<https://www.uptodate.com/contents/overview-of-cryoglobulins-and-cryoglobulinemia>

Test code

CRYO

Lab Handling

See protocol in sample requirements. Store clearly labelled aliquots in the incubator at 37C. Sent daily by courier to St Georges Hospital, London.



9745
Accredited to
ISO 15189:2012