



C-Reactive Protein

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C-Reactive Protein (CRP), named for its capacity to precipitate the somatic C-polysaccharide of *Streptococcus pneumoniae*, was the first acute phase protein to be described [1]. CRP is required for the activation of complement (via its interaction with Fc γ receptors), the acceleration of phagocytosis and the detoxification of substances released from damaged tissue, to which it binds specifically. After an inflammatory stimulus, a significant rise in CRP may be detected in the serum within 6 hours. As such, CRP was for many years thought of as a sensitive, but non-specific, passive indicator of inflammation. More recent studies have shown that, although CRP also has an anti-inflammatory role in autoimmune diseases such as systemic lupus erythematosus (SLE), it can also initiate or exacerbate the development of inflammatory lesions; for example, it is now thought that CRP is not only a marker of atherosclerotic disease, but plays a role in its pathogenesis [2]. It has also been reported that CRP inhibits endothelial nitric oxide synthase (eNOS) activity [3,4]. A subsequent study demonstrated the molecular mechanism by which CRP inhibits eNOS [5], and resulting in decreased eNOS activity, an increase in the production of reactive oxygen species, and the impairment of *in vivo* vasoreactivity.

Indications

CRP production is part of the nonspecific acute-phase response to inflammation, infection, and tissue damage. CRP values are non specific and can never be diagnostic on their own, but can contribute to the evaluation of the inflammatory response, including the cardiovascular disease risk of an individual patient. Furthermore, since trace element levels in the serum may change during inflammation, CRP levels are of relevance in the evaluation of the micronutrient status of patients with an on-going inflammatory response.

Patient preparation

No special preparation is required and the patient can continue to take nutritional supplements and medication before the collection of the sample.

Specimen requirements

Serum separator tubes (plain gel tubes - available from Biolab on request). If posted, samples must reach Biolab within 24 hours.

Price: £26.00, included free with the Biolab Health Risk Profile

Methodology: Immunoturbidimetric assay [6], IFCC calibrated.

Turn around time: 3-5 working days.

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Interpretation

Normal baseline serum concentrations of CRP are less than 0.5 mg/dL [7], but hepatic synthesis is rapidly induced in the acute-phase response. CRP concentrations are often in the range of 5.0-10.0 mg/dL and may reach 500 mg/dL . The half-life of CRP is approximately 19 hours [8] and is constant under all conditions of health and disease, so the rate of synthesis of CRP is the sole determinant of its serum concentration, reflecting the intensity of the pathological processes stimulating its production.

References

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