

# Detect and Monitor Inflammation and Infection in Dogs Using the Canine CRP TurboReader™ Assay



## What Is Serum Canine C-Reactive Protein (CRP)?

**Canine C-Reactive Protein (CRP)** is a major acute phase plasma protein (approx. 120 kDa) in dogs and is a component of the animal's immune defense, called the inflammatory response, used for fighting off foreign pathogens and invaders [1]. Like other acute phase proteins, normal physiological concentrations of canine CRP in healthy dogs is extremely low (<10 mg/l) [2]. It is produced in the liver and re-

## Why Use Canine CRP as a Diagnostic Marker? [2,3]

### Specific:

CRP is a specific marker for inflammation and only increases in the blood due to inflammatory stimuli. It is not significantly affected by gender, age, breed, stress or diet.

### Sensitive:

Early detection of inflammation before the presence of clinical systems. The CRP concentration in the blood starts increasing already 4-6 hours after the inflammatory process has started or tissue damage has been done.

### Real-time Marker:

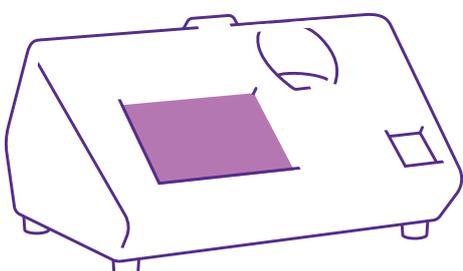
Since CRP increases and decreases rapidly in the blood within hours, the inflammatory status of the dog can be followed in real-time.

### Quantitative:

The concentration of CRP in the blood is directly proportional to the intensity or severity of inflammation or injury.

### Large-diagnostic Window:

Under inflammatory conditions, the CRP serum levels can increase more than 10x their normal levels providing a large diagnostic window for measurement.



leased into the blood in response to tissue injury or infection. When systemic inflammation or infection is present, the canine CRP concentration in the blood can increase more than 10 times its normal levels. This increase in the blood will be detectable within approximately 4-6 hours after the onset of inflammatory conditions, with the canine CRP blood concentration peaking around 24 hours [3]. Similarly, canine CRP has a short half-life (approximately 19 hrs.), which means once inflammatory conditions have subsided, the canine CRP concentration in the blood will return quickly to its normal physiological conditions within 48-72 hours [4]. Canine CRP is seen as a sensitive marker for systemic inflammation and infection in dogs due to its early and rapid increase in the blood before clinical symptoms, such as fever and increase leukocyte count, present itself [5].

## The Canine CRP TurboReader™ Assay

**The TurboReader™** is a compact, user-friendly diagnostic reader which together with single-use reagent cuvettes performs one analysis within minutes. The system can be operated with minimal training and performs tests on serum or plasma. Automatic tests results are provided on a touch screen color display with the precision and accuracy comparable to a routine clinical chemistry analyzer found in the central laboratory. The Canine CRP TurboReader™ Assay is packed together in a diagnostic kit consisting of ready-to-use cuvettes and has the following assay specifications:

- **Requires 20 µl sample** ..... **serum or Li-heparin plasma**
- **Automatic analysis** ..... **3 min analysis time**
- **Measures between** ..... **5-300 mg/l SAA**
- **Clinical inflammatory cut-off** ..... **35 mg/l**
- **Calibrated against species specific assay** .....
- **Two-step easy procedure** ..... **1-minute handling**

## How To Use The Canine TurboReader™ CRP Assay In Clinical Practice?

### 1 Detection and Diagnosis:

Detect and quantify the presence of systemic inflammation (infection or trauma) in dogs [6].

- Use to rule in or rule out inflammatory diseases.
- Use when clinical signs are unclear.
- Any CRP value of >35 mg/l indicates presence of infection.
- Does not indicate cause, only that inflammation is present.
- The higher the CRP level, the greater intensity and severity of inflammation.
- CRP is not significantly affected by gender, age, breed, stress or diet [7].

**TurboReader™ CRP > 35 mg/l** ..... **YES, INFECTION PRESENT**

**TurboReader™ CRP < 35 mg/l** ..... **NO, INFECTION NOT PRESENT**

# CANINE INFLAMMATION DIAGNOSTICS

## 2 Monitoring Treatment:

Monitor the efficacy of ongoing drug therapy in real-time and select the best drug treatment [8].

- If ongoing drug therapy is effective, CRP levels should drop in the first 24-48 hours.
- Monitor effectiveness of treatment with repeated CRP measurements during hospitalization, as well as, follow-up clinical visits.
- Continues to monitor true inflammatory status of dog, even if clinical symptoms are suppressed by drug therapy.
- Results not effected by corticosteroids, nonsteroidal anti-inflammatory agents (NSAIDs), epinephrine or similar drugs [9,10,11].
- More sensitive than total white blood cell count [12].

## 3 Monitoring Post-Operative Conditions:

Follow post-operative effects and recovery in real-time and get ahead of inflammatory complications [13,14].

- Within the first 24-48 hours after surgery, the CRP levels will increase.
- Following soft tissue surgery, CRP levels will drop significantly within 3-5 days.
- Following more invasive surgery, such as orthopedic surgery, normalization of CRP levels can take up to 1-2 weeks.
- Persistently high CRP levels following surgery may indicate post-operative complications.

## 4 Disease Relapse:

Repeated CRP measurements after disease treatment is completed, can help detect relapse early, before clinical signs are present [15].

- Increased CRP levels indicate that relapse has occurred even if clinical symptoms are not there.
- Useful in immune mediated disease [12].

## 5 Prognostic Marker:

Repeated CRP measurements over time can be used a prognostic indicator in clinical practice. Studies have shown that dogs with decreased CRP levels over time have more favorable outcomes [15,16,17].



TurboReader™ CRP



YES, DRUG TREATMENT IS EFFECTIVE



or ≈

TurboReader™ CRP



NO, DRUG TREATMENT IS NOT EFFECTIVE

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