

# Canine CRP

***gentian***

## - Interview with Dr. Anna Hillström

We have discussed the clinical use of the measurement of canine C-reactive protein (CRP) with the expert Dr. Anna Hillström, talking about CRP as a first-line test in diagnosis, clinical decisions levels, and stories from the clinic.



**“CRP is an objective, reliable, and sensitive marker of systemic inflammation in dogs”**

Anna Hillström  
Dipl ECVCP, PhD

Dr. Anna Hillström is a clinical pathologist at the University Animal Hospital (UDS) of the Swedish University of Agricultural Sciences (SLU), one of the largest and most modern animal hospitals in Europe. She is a board-certified European Specialist in Veterinary Clinical Pathology since 2011.

As a researcher, Dr. Hillström is an expert in the veterinary inflammatory diagnostic field. Her PhD thesis\* that focused on canine CRP protein assays and their applications, included a study\*\* on the validation of the Gentian canine CRP assay.

\* Hillström A (2016). Canine C-reactive protein - Validation of Two Automated Canine-specific C-reactive Protein Assays and Studies on Clinical and Research. PhD thesis.

\*\* Hillström A, Hagman R, Tvedten H, Kjølgaard-Hansen M (2014). Validation of a commercially available automated canine-specific immunoturbidimetric method for measuring canine C-reactive protein. Vet Clin Pathol 43(2), 235-243.

## Canine CRP as biomarker

The canine CRP immunoassay was brought in-house at UDS because CRP is an objective, reliable, and sensitive marker for systemic inflammation in dogs. The test is initially used to confirm or exclude systemic inflammation in symptomatic dogs. Following treatment, the assay is also used to evaluate response to therapy and the course of disease.

Dr. Hillström emphasises the advantage of using CRP as biomarker that it is both sensitive and specific to systemic inflammation (although it cannot be used to determine the cause of the inflammation), and is unaffected by stress (which can affect body temperature and leukocyte pattern). Dr. Hillström reports that CRP has been a valuable addition to leukocyte analysis at UDS because it allows for early and reliable detection of systemic inflammation. Incorporating CRP testing into clinical workflows, therefore, enables practitioners to deliver a reliable and important first diagnosis of the presence of systemic inflammations while the determination of underlying cause is made from other tests.

Dr. Hillström especially values the fact that CRP is easy to measure and is rapidly elevated in response to inflammation. As a quantitative marker of inflammation, CRP concentrations decrease significantly when the inflammatory stimulus is eliminated, making it suitable for disease monitoring.

### Clinical routine

At UDS, the canine CRP Immunoassay is used both in a panel and as a stand-alone test. In an acutely ill dog, a broad panel of tests (including CRP) is performed at admission. During treatment, CRP can be useful as a stand-alone test to monitor the remission of systemic inflammation by looking at the trends of CRP levels.



### Clinical levels

Dr. Hillström reports 20 - 500 mg/L as her clinically relevant measuring range in the clinic. At UDS 20 mg/L is used as the clinical cut-off value with a reference interval of  $< 7 \mu\text{g/L}$ , based on their reference population. Dr. Hillström also emphasises that in clinical practice very critical limits are set higher to around 50 - 100 mg/L, which call for immediate action. Every clinician should establish their own cut-off value depending on desired sensitivity and specificity to detect systemic inflammation. Elevation of CRP can be measured from 4 - 6 h after an inflammatory stimulus and maximal CRP levels are reached typically after 24 h. After elimination of the inflammatory stimuli, CRP levels can drop up to 50% within 24 h.





## Stories from the clinic

Dr. Hillström reports that CRP testing is one of the first priorities in the diagnostic work-up of a dog that is generally ill, as the test guides the diagnosis and treatment decision process. Markedly elevated CRP levels call for immediate action to find the underlying cause of the inflammation, whereas a low CRP concentration indicates that systemic inflammation is not the cause of a dog's illness. In Dr. Hillström's experience, CRP levels under the established cut-off reliably and objectively rule out severe systemic inflammation.

Dr. Hillström has provided an example of patients with joint pain, which could be mediated by infectious septic arthritis, as one who would need to be treated immediately. In contrast, a patient with joint pain caused by non-infectious osteoarthritis calls for a moderate and less urgent treatment decision.

Since CRP levels are only elevated as a response to systemic inflammation, the test can also be used to determine if the underlying cause of visible inflammation is localised or systemic. As example, Dr. Hillström mentions uveitis (inflammation in the eye) that may exist as an isolated problem or may be part of a systemic inflammatory disease in which case CRP concentrations will be elevated. Therefore, measuring CRP can differentiate between underlying causes.

**“CRP is a valuable and easy tool for the diagnostic work-up in daily clinical routine”**

### Gentian Canine CRP Immunoassay

Particle-enhanced turbidimetric immunoassay (PETIA)

Canine-specific avian antibodies

Sample type: Serum, Plasma

Measuring range: 10 - 300 mg/L, Security zone: up to 1000 mg/L (instrument specific)

Contact us:

[www.gentian.com](http://www.gentian.com)

[marketing@gentian.com](mailto:marketing@gentian.com)

**gentian**