

ACUTE PHASE PROTEINS (APP) QUICK SUMMARY

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ACUTE PHASE PROTEINS answer the question: "Is there systemic inflammation in the patient?"

C-REACTIVE PROTEIN (CRP)

CRP is a major APP in dogs and people, and a minor APP in horses and pigs; whereas in cats and cattle there is no evidence of a significant CRP concentration increase during inflammation.

SERUM AMYLOID A

SAA is typically used to investigate inflammation in horses and cats, whereas its inconstant increase during major acute phase response in different disease states in dogs has limited the use of SAA as a marker in this species. The following is a good article on responses in different inflammatory diseases in cats: Yuki, Masashi, et al. "A clinical investigation on serum Amyloid A concentration in client-owned healthy and diseased cats in a primary care animal hospital." *Veterinary sciences* 7.2 (2020): 45.

Great general review of APP in veterinary medicine:

Eckersall PD, Bell R. Acute phase proteins: Biomarkers of infection and inflammation in veterinary medicine. *Vet J* 2010; 185:23–27.

The following reference list is provided to answer some of the questions asked in the lecture:

1. Can SAA be used to monitor pancreatitis?

Cats: Here is a good case review and comparison of other analytes. There are more articles if you search but this is a typical response.

Tamamoto, T., Ohno, K., Ohmi, A., Seki, I. and Tsujimoto, H. Time–course monitoring of serum amyloid A in a cat with pancreatitis. *Veterinary Clinical Pathology*, 38 (2009) 83-86. <https://doi.org/10.1111/j.1939-165X.2008.00082.x>

Dogs: Good examples of how APPs can't be used to diagnose specific disease but can be used to assess inflammatory response and response to therapy:

Yuki, M., et al. "Clinical utility of diagnostic laboratory tests in dogs with acute pancreatitis: a retrospective investigation in a primary care hospital." *Journal of Veterinary Internal Medicine* 30.1 (2016): 116-122.

Possible prognosticators:

Sato, Toru, et al. "Assessment of severity and changes in C-reactive protein concentration and various biomarkers in dogs with pancreatitis." *Journal of Veterinary Medical Science* 79.1 (2017): 35-40.

2. Can APP measurement in fluids other than blood be diagnostically useful?

This is a good review of concepts in APPs that we didn't have time to discuss as well as the use of saliva to replace blood in some situations making sampling far easier. The reference list can also be used to do a deep dive. *Note: Saliva is not validated using Bionote assays at this time.*

Cerón J.J. Acute phase proteins, saliva and education in laboratory science: an update and some reflections. *BMC Vet Res.* 2019; 15: 197.

This is one of the foundational studies in effusions in dogs. There are several others at this point but this will provide basic concepts.

Parra, M.D., Papasouliotis, K. and Cerón, J.J. (2006), Concentrations of C-reactive protein in effusions in dogs. *Veterinary Record*, 158: 753-757. <https://doi.org/10.1136/vr.158.22.753>

3. Can these proteins be used in birds?

The Bionote Assays have not been validated in birds; but, yes, APPs can be used in birds. There has been some excellent chicken work. Note: other bird species may have different major acute phase proteins with classic response.

O'Reilly EL, Eckersall PD. Acute phase proteins: a review of their function, behaviour and measurement in chickens. *World's Poultry Science Journal* 2014; 70:27-44.



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