

Bile acid testing in companion animals

Bile acids are manufactured by the liver and secreted into the GI tract via the bile. They contribute to the digestion of food, are resorbed in the ileum and cleared almost entirely from the portal system by the liver. Consequently, in health, fasting bile acids in the systemic circulation are low. With hepatic dysfunction or abnormal vasculature (eg portosystemic shunt and microvascular dysplasia), systemic concentration of bile acids increase.

When to test bile acids

Pre- and post-prandial bile acids should be performed when clinical findings suggest liver dysfunction but routine tests are not confirmatory.

Bile acids will be elevated in patients with high bilirubin due to intra- and post-hepatic disease and as such should not be assessed in these patients.

Both pre- and post-prandial samples should be assessed. The sensitivity of detecting hepatic dysfunction in a single sample is markedly lower than with a paired test. Pre-prandial or resting serum bile acid concentration can be higher than post-prandial samples in 20-30% of animals.

Protocol for testing bile acids

There is no consensus on the specific protocol for testing bile acids. Some internists prefer dogs to be fasted and others run random fasting bile acids. Our recommended protocol is:

- Obtain a serum sample with minimal haemolysis
- Feed 2 Tbsp to a cat or small dog and 4 Tbsp to a medium to large dog of a canned maintenance diet
- Obtain a second serum sample 2 hours later

Interpretation

High bile acids in either the pre-/resting or post-prandial bile acid concentration are consistent with impaired hepatic function.

Artifacts

Haemolysis can artificially decrease and lipaemia artificially increase bile acid concentration.

Mimics

Other diseases which can increase bile acids include obstructive pancreatitis, altered gastrointestinal motility, glucocorticoid administration and hyperadrenocorticism. However, increase in bile acids are generally small compared to hepatic dysfunction.