The Bile Acids Stimulation Test

By Elizabeth Schooley, DVM, MS, DACVIM

The liver performs numerous vital functions including metabolism and storage of nutrients, immunoregulation and removal of toxic biproducts.[1] Traditional liver enzymes, such as alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP) and gamma glutamyl transferase (GGT) serve as sensitive markers of hepatocyte injury and swelling but do not specifically assess liver function. Bile acids testing provides a method to evaluate liver function by estimating the efficiency of enterohepatic circulation.

Bile acids testing is useful for:

- Assessing liver function
- Screening for vascular anomalies, such as portosystemic shunts
- Identifying occult liver disease in animals with subtle changes in their lab work

Bile Acids Stimulation Test Protocol

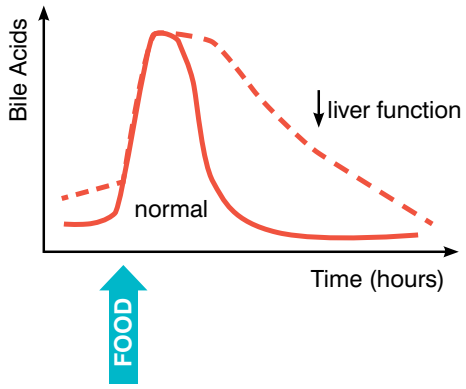
- Fast patient approximately 12 hours and collect a fasting (preprandial) blood sample.
- Feed patient a small meal to stimulate gallbladder contraction.
  - Recommended amount of food is 2 tsp for small patients (<4,5 kg) and 2 Tbsp for larger patients.
- Two hours after feeding, collect a postprandial blood sample.

Bile acids are synthesized in the liver from cholesterol, excreted into the biliary tract and stored in the gall bladder. After a meal, the gall bladder contracts, which leads to release of bile acids into the duodenum where they assist in lipid digestion. The bile acids are then reabsorbed in the distal ileum and transported back to the liver via the portal vein (enterohepatic circulation). Normally, over 95% of bile acids are recycled from the portal vein in this manner.[2]

A single bile acids concentration can provide some information about liver function. To gain the most diagnostic insight, it is recommended to perform a bile acids stimulation protocol which provides a dynamic challenge allowing estimation of the efficacy of enterohepatic circulation. The specificity of the bile acids stimulation for hepatobiliary disease in dogs and cats has been reported to be between 95-100% and the sensitivity of the bile acids stimulation test for diseases such as portosystemic shunts and cirrhosis has been reported to be close to 100%.[3] Several studies have shown significantly deceased sensitivity and specificity when a single bile acids measurement is performed without the stimulation protocol. [2,4–6]

Bile Acids Stimulation in Health and Disease

- In a healthy patient, both the pre- and post-prandial bile acids results should be within their respective reference intervals.
- In a patient with liver dysfunction, caused by diseases such as hepatic cirrhosis, the liver is unable to process the bile acids efficiently and the pre- and/or post-prandial results will be significantly elevated.
- In a patient with a vascular anomaly, such as a portosystemic shunt, bile acids values are expected to be elevated due to blood bypassing the liver before the liver can extract the bile acids.
- In some cases, the pre-prandial bile acids concentration can be higher than the postprandial concentration. In these cases, the general recommendation is to interpret the higher of the paired results.



* Bile Acids testing is available in house on Catalyst® Chemistry Analyzers and through IDEXX Reference Laboratories

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