

# MAMMALIAN LIVER PROFILE UTILIZATION GUIDE

“Measurement of serum bile acids is, for the typical practitioner, the most practical and reliable means of evaluating liver function, and the development of an ‘in clinic’ bile acid assay will significantly increase the convenience of this important test”  
 – Dr. Andrew Macklin BSc BVMS DVSc FACVSc MRCVS, Mississippi State University

Utilization of the Mammalian Liver Profile in the veterinary practice will enhance patient care, improve veterinary diagnostics and provide additional practice revenue. Hepatic disease is frequently a diagnostic challenge, and the utilization of easy to use, in-office testing that includes bile acids assists with this challenge.

## HEPATIC DISEASE

- The liver is especially prone to the adverse effects of many disease states:
  - The liver has two blood supplies.
    1. The general circulation.
    2. Via the portal vein from the intestine.
  - The general function of the liver also places it at risk.
- Changes in hepatic enzymes can be due to pathology of the liver or from secondary effects of other disease states.
- Some of the enzymes used to evaluate liver function (i.e. ALP) can be induced by certain drugs (Phenobarbital) or disease states (hyperadrenocorticism).

### Utilization of the Mammalian Liver Rotor

1. Diagnosis of hepatic disease.
2. Monitoring of chronic hepatic disease.
3. Monitoring the effects of potentially hepatotoxic medications.

### Diagnosis of Hepatic Disease Utilizing Bile Acids

Diagnosis of any condition requires a combination of history, physical examination, complete blood counts, chemistry, urinalysis, imaging, etc. However, when liver disease is indicated due to elevations in common liver enzymes, determination of liver disease vs. secondary hepatic changes is vital in determining the need for additional diagnostics, such as ultrasound and or biopsy, interpretation of those results, and prognosis. Bile acid evaluation provides the veterinarian with a highly sensitive test for liver disease and portosystemic shunts. It is easy to perform and a cost effective method to aid in determining the health of the liver.

## BILE ACIDS

Bile Acids are a family of detergent-like compounds synthesized from cholesterol exclusively in the liver. They provide intestinal fat digestion and absorption. In addition, they are very efficiently reabsorbed into the portal blood and returned to the liver via the portal vein.

Bile acids elevate in the general circulation due to:

- Decreased Bile Acid clearance from portal blood.
  - Hepatocyte damage reduces functional hepatic mass causing impaired clearance.
  - Congenital and acquired porto-systemic shunts or portosystemic vascular anomalies.
- Decreased biliary excretion of Bile Acids.
  - Impaired hepatic or post-hepatic bile flow due to any cause.

### Utilization of Bile Acids to Assist With Diagnosis of Hepatic Disease - General Rules of Interpretation

Bile Acid levels should always be evaluated in light of other hepatic analytes.

Normal/mildly elevated pre-prandial BA	Liver function may be normal.
Very elevated pre-prandial BA	Indicative of significant liver dysfunction, congenital or acquired porto-systemic shunting.
Normal pre-prandial BA & very elevated post-prandial BA	Indicative of more subtle cases of liver dysfunction or porto-systemic shunting.
Very elevated pre- & post prandial BA, with minimal rise in BA after feeding	Indicative of possible post-hepatic biliary obstruction or biliary stasis.
Pre-prandial BA higher than post-prandial	In normal patients, may result from spontaneous interdigestive gallbladder contraction during fasting.