

## Elevated Liver Values

The liver is a large organ located in the abdomen and performs numerous vital functions. It filters toxins, pathogens, and byproducts from the blood, produces and transports bile, and synthesizes protein, glucose (sugar), cholesterol, and clotting factors. Normal liver function is critical to health. When the liver becomes damaged, normal function may become compromised.

The most commonly measured liver enzymes are ALT (alanine aminotransferase), AST (aspartate aminotransferase), ALP (alkaline phosphatase), and GGT (gamma glutamyl-transpeptidase). Bilirubin is also measured to evaluate liver function. Bilirubin is processed and transported by the liver to the gall bladder for storage and excretion with bile. The biliary system refers to the ducts and glands that transport and hold bile; ducts are found within the liver and travel to the gall bladder and the GI tract for bile excretion.

Liver enzymes and bilirubin may become elevated when liver cells are damaged or when the biliary system is damaged or obstructed. More specifically, the liver can become damaged by trauma, inflammation, infection, toxins, cancerous processes, and changes to blood flow (shock). In dogs with certain endocrine diseases, the liver cells can become congested with glycogen (a storage form of glucose). In cats with a recent history of acute, substantial weight loss, the liver cells can become congested with fat, termed fatty liver or hepatic lipidosis. Both dogs and cats can develop several different types of biliary obstruction, including gall bladder disease and pancreatitis, either of which can result in elevated bilirubin and liver enzymes.

It's worth noting that dogs on certain medications including steroids or phenobarbital or with certain endocrine diseases may develop elevated liver values because of the influence of hormones or medications on the liver.

The presence of elevated liver values warrants further work-up to determine the cause. Advanced imaging with ultrasound is often pursued to better evaluate for acute, obstructive gall bladder disease, liver tumors, severe pancreatitis, or evidence of diffuse, infiltrative disease or scarring in the liver. If imaging is normal, sampling of the liver with fine needle aspirate or biopsies may be advised.

In asymptomatic or mild cases of elevated liver values, medication that provides liver support and recheck blood work may be recommended. Other causes of elevated liver values can be much more serious. An obstructed gall bladder may constitute a surgical emergency. Significant liver dysfunction or liver failure requires hospitalization as life-threatening complications are possible.

