

TEST SERVICE UPDATE

Gastrointestinal Function Testing:

Canine TLI, Folate and Cobalamin

Why TLI, Folate and Cobalamin?

Small animal gastrointestinal disease can be frustrating to diagnose. Clinical signs can be obvious, diarrhea and weight loss, or subtle such as anorexia without diarrhea. For many patients with gastrointestinal disease antiparasitics and supportive care, including diet manipulation, resolve clinical signs. However, when signs do not respond to empirical treatment, primary small bowel disease, pancreatic disease or secondary disease such as hypoadrenocorticism should be considered. What might have appeared to be a resistant parasitism infection may turn out to be protein losing enteropathy (PLE) based on hypoalbuminemia, hypoglobulinemia and hypocholesterolemia found on routine blood work (CBC, chemistry, UA).

Gastrointestinal Function Testing is used to diagnose gastrointestinal disease including exocrine pancreatic insufficiency (EPI), pancreatitis and small intestinal malabsorption. Confirmatory testing, to include imaging, endoscopy, biopsy, would be needed to determine the primary cause of malabsorption such as inflammatory bowel disease (IBD), neoplasia and lymphangiectasia.

Canine TLI values <2.5 ug/L are diagnostic for EPI. Values in the equivocal range (3.5-5.0 ug/L) could indicate sub-clinical pancreatic disease with the potential for progression to EPI. Values between 2.5 and 3.5 ug/L rarely are associated with clinical signs due to EPI. In patients with TLI values between 2.5 and 5.0 ug/L, consider repeating the canine TLI in one month, making sure the patient is properly fasted for 12-15 hours. Exocrine pancreatic insufficiency in the cat has been reported, but is rare. **Feline TLI** is available as a send-out test (SO643).

For the diagnosis of pancreatitis in the dog and cat, order send out test **Pancreatic Lipase Immunoreactivity** (PLI, SO4689). Although an elevated TLI can be seen in pancreatitis the PLI should be used to diagnose pancreatitis. An elevated TLI may also be seen with malnutrition, azotemia and nonspecific gastrointestinal disease in the cat.

Vitamins **Folate** and **Cobalamin** (Vitamin B12) are absorbed in the proximal and distal small bowel, respectively. Detecting decreased levels of folate and/or cobalamin can help support a diagnosis of proximal and/or distal small bowel disease. Elevated folate levels, particularly with decreased cobalamin levels, supports bacterial overgrowth. There is no known clinical significance of elevated cobalamin levels. Cobalamin and folate levels may be normal in small intestinal disease if the intestinal disease is not sufficiently severe or chronic to affect absorption of these vitamins. It is recommended to run the TLI concurrently with cobalamin and folate levels to rule-out EPI as a cause of changes in folate/cobalamin. Optimal response to treatment of EPI with pancreatic enzyme supplementation may require concurrent cobalamin

supplementation and/or treatment for bacterial overgrowth. Folate, and particularly cobalamin levels, can be decreased in cats with hyperthyroidism. Those cats should be further evaluated for concurrent small bowel disease.

Cobalamin supplementation is indicated for low levels of cobalamin; supplementation of folate is less well understood but may be beneficial in patients with low levels of this vitamin.

Assay Information:

The canine TLI, Cobalamin (Vitamin B12), and Folate assays are **chemiluminescent immunoassays** that rely on measurement of light emission and are automated tests performed on the Immulite 2000. These assays are highly sensitive and less prone to background interferences than some other immunoassay methods. Phoenix Lab performed full method validation (including sample comparison with the Texas A&M GI Lab over several months), in order to bring these tests in-house in 2016, allowing for quicker turnaround time and at a lower cost. Reference ranges were established at Phoenix in 2017.

Sample Information:

Test code	Name	Specimen Requirements
68	Canine TLI (cTLI)	RTT or SST, 0.5 ml fasted serum
69	Folate	RTT or SST, 0.5 ml fasted serum
70	Cobalamin (B12)	RTT or SST, 0.5 ml fasted serum
689c	Canine TLI, Cobalamin, Folate	RTT or SST, 1.5 ml fasted serum
2689	Cobalamin & Folate	RTT or SST, 1 ml fasted serum

Testing Schedule:

Monday, Wednesday, Friday (AMs)

Note:

Fasting is Important! Patients must be fasted 12-15 hours (diabetic animals 6-8 hours) and serum must be non-hemolyzed and non-lipemic. Folate is light-sensitive, so it is recommended to wrap the serum tube in paper or aluminum foil. Administration of oral pancreatic supplementation does not affect TLI and thus withdrawal prior to testing is not necessary.

Reference Intervals:

Canine Trypsin-Like Immunoreactivity (TLI):

Normal = 5.0-45.0 µg/L

Diagnostic for EPI = <2.5 µg/L

Equivocal Zone = 2.5-5.0 µg/L

Cobalamin (B12) and Folate:

Canine Normal Ranges

Cobalamin (B12) = 250-900 ng/L

Folate = 7.5- 24 µg/L

Feline Normal Ranges

Cobalamin (B12) = 290-1,500 ng/L

Folate = 9.0-21.0 µg/L