

Testing for pancreatitis in Dogs - Diagnosis and follow-up treatment



The term 'lipase' refers to a group of enzymes involved in lipid metabolism (lipoproteins and triglycerides).

Lipase activity is found in different tissues in the body: the pancreas, the liver, the stomach, the small intestine, adipose tissue, etc. This distribution varies among species. But, in all cases, the challenge is to detect changes in lipase activity, primarily in relation to pancreatic damage.

During severe, acute or chronic pancreatic damage (infection, tumour, ischemia, etc.), the concentration of lipase in the blood increases.

In most cases, the values are very high (over 3 times greater than the normal value).

Other biochemical parameters also change without presenting a specific characteristic. Nevertheless, testing is decisive in assessing the prognosis and follow-up treatment.

Fujifilm offers the FDC v-LIP-P slide specifically for Dogs

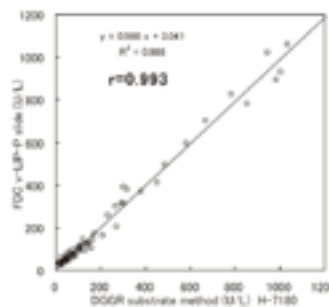
The standard biochemical method for the lipase assay is the DGGR procedure*.

Because of its characteristics (substrate used, triolein and SDBS), the Fujifilm procedure is perfectly correlated to this procedure.

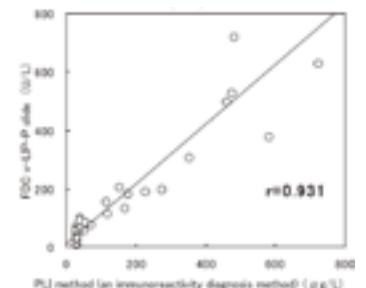
Moreover, compared to the immunological technique which only evaluates lipase activity in the pancreas, the correlation is also very good⁽¹⁾.

*DGGR: 1,2 -o-Dilauryl-rac-glycero-3-glutaric acid-(6-methyl-resorufin) ester

FDC vLIP-P vs DGGR Method*



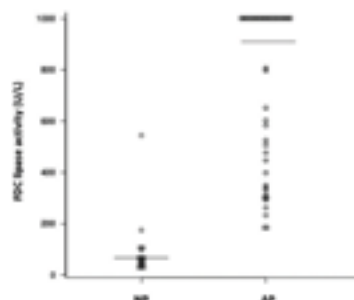
FDC vLIP-P vs Immunological Method



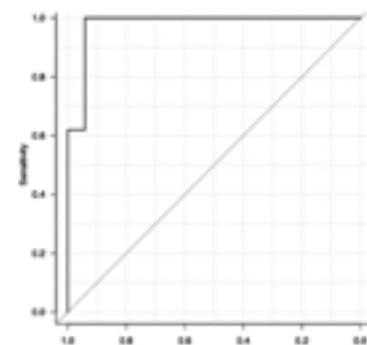
Use of FDC v-LIP-P in testing for acute pancreatic failure

Because of its characteristics, particularly the substrate used in this slide, FDC v-LIP possesses very good specificity and sensitivity that can distinguish between patients with acute pancreatic damage and those in good health (without pancreatic damage).

It is the first line biochemical parameter of choice for diagnosing acute pancreatitis in Dogs.



Comparison of lipase activity measured with FDC v-LIP between groups with and without acute pancreatitis.
(2) Significant difference ($P < .05$)



ROC curve for FDC v-LIP during acute pancreatitis.
(2) Sensitivity of around 100% and Specificity of around 90%



Diagnostic approach

If acute pancreatic damage is suspected in Dogs, resorting to additional testing is essential.

A targeted blood biochemistry test, that is more or less associated with an ultrasound examination, establishes the diagnosis in the majority of cases.

Minimum initial tests recommended: vLIP, CRP, ALT, PAL, total Bilirubin, Urea, Creatinine, electrolytes, TCO₂ and CBC:

- vLIP to detect the destruction of pancreatic parenchyma
- CRP to detect the inflammatory process and carry out follow-up treatment
- ALT, PAL and total Bilirubin to assess the associated liver lesions and the prognosis (stages I to IV)
It appears that a high ALT value shows a slower recovery (2)
- Urea and Creatinine to better analyse the vLIP value and prepare possible recovery
- Electrolyte test and TCO₂ to detect possible associated electrolyte/pH disorders
- CBC to examine infectious and necrotic processes, and extracellular hydration

Analysis of the results

Common value for v-LIP in Dogs*: 10 - 160 U/L

WARNING, the Lipase value obtained is assessed on the basis of several criteria:

- Lipase is subject to kidney glomerular excretion and tubular reabsorption
- Hyperlipemia and/or severe hemolysis interferes with the lipase assay by underestimating actual in vivo enzymatic activity

Therefore, kidney failure, hyperlipemia and severe haemolysis may complicate the diagnosis of acute pancreatitis. Resorting to an immunoassay may prove to be useful in these circumstances. Nevertheless, this requires intervention by an external specialised laboratory.

*According to IFCC standards, measured with vLIP-P with the Fuji Dry Chem range analyser

Treatment follow-up

Given its plasma half-life, CRP appears to be the parameter of choice in assessing clinical progression and therapeutic efficacy⁽²⁾.

- Follow-up proposal:
- Day 2: Electrolyte test and CRP
 - Day 5: Electrolyte test, CRP, vLIP, NFS

Technical characteristics

- ▶ Name FDC vLIP-P Slide
- ▶ Analysis time 5 minutes
- ▶ Sample Plasma and Serum - 10 µl
- ▶ Measuring range 10 - 1000 U/L
- ▶ Common value in Dogs 10 - 160 U/L
- ▶ Storage 2 - 8°C

References:

- (1) Ishioka K, Hyakawa N, Nakamura K, et al. Patient side assay of lipase activity correlating with pancreatic lipase immunoreactivity in dogs. J Vet Med Sci 2011.
(2) Yuki M, et al. Clinical utility of diagnostic laboratory tests in Dogs with acute pancreatitis - retrospective investigation in a primary care hospital. J Vet Intern med 2015.

