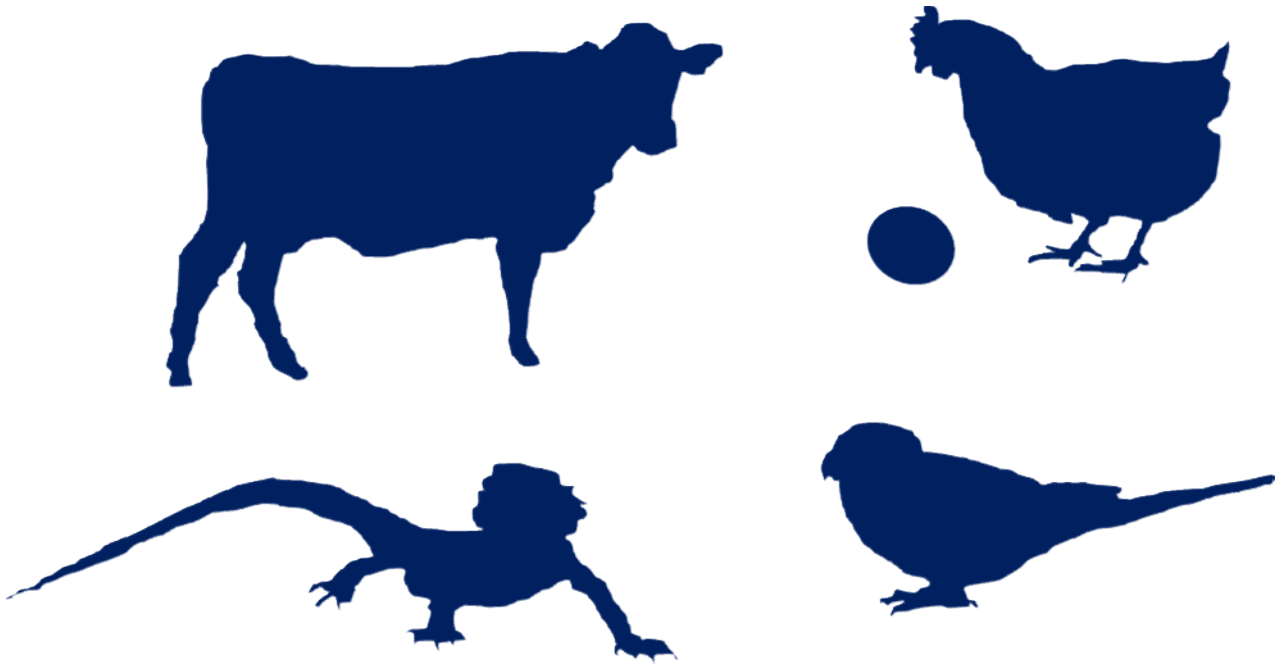
LipoSEARCH® Application in Veterinary Research
– Exotic Pets and Domestic Animals –

LipoSEARCH® is a cutting edge "lipoprotein profiling service" based on a GP-HPLC followed by a unique data analysis algorithm (patented).

LipoSEARCH® – Features & Benefits –

- ◆Require only a small amount of serum/plasma
- ◆No need of sample pretreatment
- ◆Any animal species of sample is applicable
- ◆Provide detailed lipoprotein profiling data
- ◆Can be identified lipoprotein fractions and lipids on which drug acts

The service has been used in a broad range of research fields, such as medical, pharmacology, nutrition, veterinary medicine, and over 550 scientific papers have been published. Here are some papers in veterinary research which *LipoSEARCH*® has been used.



Association of plasma metabolites and diagnostic imaging findings with hepatic lipidosis in bearded dragons (Pogona vitticeps) and effects of gemfibrozil therapy

Trinita K Barboza et al

PLoS One. 2023 Feb 3;18(2):e0274060.

Hepatic lipidosis, also known as fatty liver disease or steatosis, is a commonly reported necropsy finding in pet bearded dragons (*Pogona vitticeps*), around 30%, and progress to liver failure. This study demonstrated the gemfibrozil therapy effect on hepatic lipid accumulation and related diagnostic tests by examining the association between plasma metabolites, biochemical analytes, diagnostic imaging findings and the histologic diagnosis of hepatic lipidosis in 14 bearded dragons with different severity of hepatic lipid accumulation. Plasma Lipoproteins were analyzed for cholesterol concentration, triglycerides concentration, and particle numbers across 4 major classes and 20 sub-fractions by advanced lipoprotein profiling (*LipoSEARCH*®). Beta-hydroxybutyric acid (BHBA) concentration showed positive correlation to lipidosis and BHBA and suggested that BHBA and succinic acid will be biomarkers for Lipidosis in bearded dragons. Also, Fibrozil improved the biomarkers and reduced liver fat in bearded dragons with hepatic lipidosis.

Effects of a 0.3% cholesterol diet and a 20% fat diet on plasma lipids and lipoproteins in Quaker parrots (Myiopsitta monachus)

Hugues Beaufrère et al

Vet Clin Pathol. 2022 Sep;51(3):376-384.

Psittaciformes are prone to dyslipidemia and various lipid disorders, such as atherosclerosis, hepatic lipidosis, obesity, and fatty tumors. However, it has been difficult to diagnose and connect these conditions concurrently to plasma dyslipidemic changes in large cohorts of birds, and clinical lipidological testing in small birds has been typically restricted to simple tests. In this study, the effects of 0.3% cholesterol diet and 20% fat diet (n-6 polyunsaturated fatty acids) on plasma lipids and lipoproteins in Quaker parrots was demonstrated by *LipoSEARCH*®. The results showed that total lipoprotein lipids increased in the 0.3% cholesterol diet group, with a particularly large increase in non-HDL. The 20% fat diet group showed mainly a decrease in plasma glycerolipids and an increase in acylcarnitines, while lipoprotein plasma levels remained unchanged. The cholesterol diet model is a useful tool for evaluating various treatments in parrots with dyslipidemia and further studies are needed to evaluate the effects of n-6 and n-3 dietary supplementation.

Slight Disruption in Intestinal Environment by Dextran Sodium Sulfate Reduces Egg Yolk Size Through Disfunction of Ovarian Follicle Growth

Takahiro Nii et al

Front Physiol. 2021 Jan 15;11:607369.

Intestinal environments such as microbiota, mucosal barrier function, and cytokine production affect egg production in laying hens. This study demonstrated oral administration effect of lower dose dextran sodium sulfate (DSS) on intestinal environment and egg production in laying hens. Vitellogenin (VTG) and VLDL are the main components of egg yolk precursors. Specific VLDLs, with a particle size of 25-44 nm, called "VLDLy", accumulates in developing egg yolk. In this study, cholesterol and TG concentrations contained in the VLDLy fraction were measured by *LipoSEARCH*®. Oral administration of lower dose DSS to laying hens did not affect liver function involved in egg yolk precursor production, and suggesting that VLDLy is not utilized for follicle development in the ovary while the liver supplies sufficient amounts of VLDLy into blood. The study concluded the reduction of yolk size induced by oral administration of lower dose DSS is attributed to impaired uptake of yolk precursors in the ovarian follicle.

Blood Lipid Diagnostics in Psittacine Birds

Hugues Beaufrère

Vet Clin North Am Exot Anim Pract. 2022 Sep;25(3):697-712.

Lipid disorders such as atherosclerosis, hepatic lipidosis, obesity, and xanthomatosis are common in captive psittacine birds and are associated with a variety of dyslipidemias. However, lipoprotein abnormalities have not been well described in psittacine birds and lipoprotein panels should be performed more commonly in sick birds. The study reported that ultracentrifugation was not able to provide lipoprotein particle size information or number of particles, and that NMR, LDL-C formulas, and direct LDL-C methods were not suitable for lipoprotein testing in psittacine birds. *LipoSEARCH*® was introduced as a useful method for obtaining lipoprotein profiles with small plasma sample volume, along with a case study of Quaker parrots.

Profiles of Lipoprotein Cholesterol and Triglyceride Concentrations in Periparturient Cows

Hidemi Yasuda et al

J Vert Epidemiol. 2013 Volume 17 Issue 1 Pages 52-56.

The study investigated a profile of cholesterol and triglyceride (TG) concentrations in four major lipoprotein fractions in Holstein dairy cow with peripartum period. *LipoSEARCH*® was used for lipoprotein analysis and means (±SEM) of total concentrations of cholesterol and TG in pre-partum cows were 83.61 (±3.9) and 14.1 (±0.69) mg/dl, respectively. After calving, total concentrations of cholesterol and TG decreased to 70.31 (±4.07) and 5.53 (±0.57) mg/dl. Especially, VLDL-C and VLDL-TG concentrations decreased by 70% or more.
Cholesterol correlated between VLDL, LDL, and HDL for both before and after delivery. On the other hand, TG strong correlated between CM and VLDL only after delivery. The study concluded CM and VLDL are closely related to TG transport for parturition and lactation, Cholesterol and TG are differentially involved in parturition and lactation.

Learn More: *LipoSEARCH*® →

This service is for research purposes only.
It cannot be used for clinical diagnostic purposes.

Information Video Method

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