

# Canine Hyperlipidemia

Canine Hyperlipidemia can be a confusing condition and difficult to understand. Compounded on top of this there is limited information available explaining the condition in canines, even in Miniature Schnauzers where it occurs very frequently. When severe, it can be a serious, if not a life threatening condition and must be addressed by your vet.

Though Miniature Schnauzers are predisposed to hyperlipidemia, any breed of dog or cat can acquire certain types of hyperlipidemia. Hyperlipidemia is a condition in which the amount of fats (lipids) in the blood are elevated. This includes both triglycerides and cholesterol being too high. Hyperlipidemia occurs normally for a short time after a meal, then returns to the correct level. However, some dogs have a metabolic problem which prevents the proper cleaning of the fat from the blood stream, resulting in the high lipids. To be clear, there are two other separate conditions; hypertriglyceridemia (high triglycerides only) and hypercholesterolemia (high cholesterol only).

Hyperlipidemia either results from a genetic (primary) defect in lipoprotein metabolism or is an acquired disorder that develops secondary to another disease where lipid metabolism is significantly altered (example: diabetes mellitus).

Miniature Schnauzers are predisposed to genetic (primary) hyperlipidemia. It is also referred to as idiopathic hyperlipidemia, which means the high triglycerides and cholesterol are from an unknown cause. Typically it affects Miniature Schnauzers over 4 years of age.

Hyperlipidemia can also occur as a result of, secondary to another disease:

- Diabetes Mellitus
- Hypothyroidism (low thyroid function)
- Cushing's Disease (overactive adrenal glands)
- Liver Disease
- Glomerular Disease (kidney disease that causes loss of protein)
- Pancreatitis

Risk Factors for Hyperlipidemia:

- Obesity
- High dietary intake of fats
- Genetic predisposition to the condition

Some Possible Complications from Hyperlipidemia:

- Eye Problems (an example would be fat deposits in the eye)
- Seizures if very severe
- Pancreatitis (often being acute). Note that pancreatitis can be both a cause and an effect of hyperlipidemia. This can be a short term problem, or life long, depending on the case.

## Diagnosis

Diagnosis can be confirmed by doing a simple blood test on a dog that has fasted for 12 hours.

## Treatment

These are the steps we usually go through to treat hyperlipidemia:

1. check for problems that might be causing hyperlipidemia listed above. This can involve doing bloodwork, urinalysis, or even ultrasound.
2. *low fat/high fiber diet* (list of examples below). Though this kind of diet is ideal for a dog with hyperlipidemia, we will occasionally avoid changing the diet in a diabetic dog that is well regulated, so as not to upset insulin dose, which can cause illness.
3. *omega-3 fatty acids (fish oil)* at 1 regular strength (300-350 mg EPA/DHA) capsule per 10 pounds body weight, or one extra strength capsule (500-600 EPA/DHA) per 20 pounds daily. Omega-3 fatty acids reduce plasma triglycerides by decreasing production of VLDL (very low density lipoproteins). This should be first line therapy. Fish oil also can be beneficial for dogs with glomerular (kidney) disease, arthritis and skin problems. If diet and fish oil do not control the problem after a month or so, we go on to the steps below, one at a time, until the problem is controlled. You can get fish oil at the health food store and most pharmacies. See our fish oil handout for a list of recommended brands.
4. *niacinamide (a B vitamin)* reduces triglyceride production in the liver and VLDL production. We recommend 250mg for dogs less than 10kg and 500mg for dogs greater than 10kg. You can get niacinamide at the health food store, and at many pharmacies. Steps below are taken only for the most severe cases.
5. *gemfibrozil (Lopid, Parke Davis)* if the above doesn't work after 30 days. Use for at least 3 months before deciding it's not going to work. Other drugs in this category are clofibrate, bezafibrate, ciprofibrate, and fenofibrate. These drugs reduce triglycerides by 20-40% in people. Reported adverse effects include abdominal pain, vomiting, diarrhea liver enzyme elevations and liver failure.
6. Of all else fails, try statin drugs (lovostatin, simvastatin, pravastatin, fluvastatin, cerivastatin, atorvastatin). Clinical experiences with 'statins' in dogs is very limited, but they generally have good safety profiles in dogs. In humans, the statins can lower triglyceride concentrations by 10-15%. Adverse effects include lethargy, diarrhea, muscle pain and hepatotoxicity. There is a natural compound which contains lovastatin (red yeast rice), and is available at health food stores in standardized extracts, to ensure lovastatin content. Red yeast rice is significantly more affordable than the statin drugs.
7. Bile acid absorbers such as cholestyramine and colestipol are used in people, but I have not heard of them being used in pets. Chitosan (from chitin in shellfish) is a natural compound which professes to do bind fats in the GI tract. I have heard some anecdotal reports of veterinarians using this for patients with hypertriglyceridemia. It is very safe, but I don't know how effective it is. The only side effect I can think of would be shellfish allergies. Of course, it probably shouldn't be given with fat soluble vitamins or therapeutic lipids (fish oil, etc.).

Acceptable canine diets: Eukanuba Restricted Calorie, Purina CNM OM, Purina CNM DCO, Hill's W/D, Hill's R/D, Eukanuba Glucose Control, Eukanuba Adult Reduced Fat, Royal Canin Diabetic.

Acceptable cat diets: Eukanuba Restricted Calorie, Hill's R/D, Hill's W/D, Royal Canin Fiber Response, Purina CNM OM, Purina CNM DCO.

The goal is for the triglyceride level to be less than 500 mg/dl and cholesterol level less than 300 mg/dl with little or no weight loss. A triglyceride level exceeding 1000mg/dl puts the dog at extreme risk, especially of developing acute Pancreatitis.

### Diabetics and Hyperlipidemia

Diabetic Miniature Schnauzers are notoriously some of the most difficult to regulate. Until you get the hyperlipidemia under control, it will be very difficult to arrive at an insulin dose which is consistently effective. Diabetics with hyperlipidemia are especially prone to pancreatitis, which can be very serious.