

## **Preventing Urate Stone Formation In Dalmatians Using A Basically BARF Diet**

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Because of a peculiarity in their metabolism, Dalmatians, particularly male Dalmatians have the potential to form stones [also called crystals or calculi] in their urine. These stones are caused by the crystallisation or precipitation of salts of uric acid. These so called urate stones can cause a blockage somewhere in the urinary system. A blockage can be life threatening if not dealt with promptly and adequately.

The formation of these stones occurs because Dalmatians are a unique breed of dog that excretes uric acid in their urine rather than allantoin as do all other dog breeds. Uric acid and allantoin are both breakdown or waste products derived from a group of chemicals called purines. Purines are part and parcel of the molecules DNA and RNA. That is, purines are part of the genetic coding, which is found in all cells capable of dividing or producing protein. Most cells in fact!

The presence of uric acid rather than allantoin in the urine of Dalmatian dogs causes stone formation because uric acid, compared to allantoin is not very soluble in water. As a result, salts of uric acid can easily precipitate out of solution and form crystals or stones.

It is very important to note that these stones form more easily in an acid urine than an alkaline urine and that they form more easily in a concentrated urine rather than a dilute urine.

These crystals of uric acid can form or become lodged in the urinary bladder, the urethra [tube from bladder to outside] or more rarely the kidneys or ureters [tube from kidney to bladder].

Although Purines, [from which uric acid is formed], are essential for life's processes, a dog's diet does not have to contain them. Dogs can make all the purines they need from other dietary components. That is why, in the case of Dalmatians, to reduce the possibility of urate stones being formed in the urinary system, it is not only important, but it is quite safe to reduce the level of purines in the diet. It is not however, safe, nor is it necessary to reduce the level of protein in the diet to the extremely low level adopted by many Dalmatian owners.

This is because although purines are only found in protein containing foods, they are not actually derived from proteins. That is, DNA and RNA are not proteins. Therefore uric acid and allantoin are not derived as breakdown products of proteins as so many Dalmatian owners and breeders believe. Urea is the chemical excreted in the urine of dogs as a result of the breakdown of proteins. Uric acid is a different chemical to urea. The two should not be confused. That is why it is not necessary to reduce protein in the diet to prevent the formation of these stones. It is however, necessary to reduce those protein foods which have high levels of purines in them.

In western countries today [US, Australia and England], I am lead to believe that a typical homemade diet for stone formers would contain about 80% rice, 10% vegetables, and 5% meat. This is an appalling diet to feed any dog. This is borne out by those dogs forced to endure it. They suffer from numerous problems including continual hunger, a lack of energy, poor coat condition, and difficulty in maintaining weight or severe losses of weight. This is because such a diet is way too low in both protein and fat, together [doubtless] with many additional mineral and vitamin deficiencies. However, it gets worse. There have been nine cases reported of stone forming Male Dalamtians with the disease dilated cardiomyopathy (DCM). All of these dogs were being fed prescription diets which would have had a similar nutritional profile to the home made diets. All of the dogs had symptoms consistent with congestive heart failure including coughing, decreased appetite, difficulty breathing, and fainting. It is highly unlikely that the heart problems these dogs were/are suffering are due to anything other than a multitude of nutritional deficiencies about which we can only speculate. The official line is that "there is no known cause for DCM but nutrition and genetic factors are suspected." I would like to speculate that the major genetic factor involved will boil down to being a stone forming Dalmatian. I should also like to hypothesise that the nutritional deficiencies which are causing this DCM will ultimately turn out to be a major deficiency of the amino acid Taurine, deficiencies involving essential fatty acids, vitamin E, B vitamins and various minerals including magnesium and selenium.

## **PURINE LEVELS IN FOODS [A rough guide only]**

### **FOODS HIGHEST IN PURINES**

Organ meats, red meats, seafoods, and brewer's yeast.

## **FOODS MODERATELY HIGH IN PURINES**

Asparagus, bacon, whole grain breads & cereals, cauliflower, legumes (kidney beans, navy & lima beans, lentils, peas), white meats, meat soups & broths, mushrooms, oatmeal, peas, spinach.

## **FOODS LOWEST IN PURINES**

Butter, cheese, eggs, fats, fruits & fruit juices (avoid citrus to minimize abnormally acidic urinary pH), gelatin, milk (including butter, condensed, malted), nuts (including peanut butter), pasta (you will have to evaluate the sauce and other ingredients separately), sugars, syrups, sweets, vegetables (except those above), vegetable & cream soups, (made with acceptable vegetables, but not with beef stock)

Therefore, to prevent the formation of urate stone disease in Dalmatians the diet must be manipulated in such a way as to lower the concentration of uric acid in the urine. This can be done in several ways. One way is to produce lots of urine by increasing the consumption of water. Another way is to reduce the level of uric acid in the urine by feeding a diet low in purines. Thirdly, because uric acid salts are more soluble in an alkaline urine, it is important to alkalinise the urine. Finally it is also important to control any urinary tract infections as these contribute to stone formation.

There is a concern [ in many people's minds] about BARF diets [Bones And Raw Food diets] for Dalmatians as the BARF diet is high in protein and many [but not all] of the the protein sources used in the BARF diet are high or moderately high in purines. The question in many Dalmatian owners' minds is how do we give our dogs the benefit of BARF without increasing the incidence of urinary stone formation?

The best choice for raw meaty bones would be chicken wings, chicken necks, chicken backs, and turkey necks. Use plenty of pureed or pulped vegetables including lots of leafy greens. The diet could also include eggs, cottage or ricotta cheese, yogurt, olive oil, flaxseed oil, and even some peanut butter. The diet would be supplemented with a vitamin B complex, Vitamin E, kelp, and a tsp. of cod liver oil several times a week. Dalmatian owners must keep organ meats to a minimum and be sure the diet contains plenty of water. A raw food diet has more moisture than a commercial diet but you may want to add 3/4 to 1 cup of extra water to a meal to keep the dog really well hydrated. The goal for a Dalmatians is to keep the urine neutral and dilute.

The following is a diet based on the above principles which is being used successfully to feed a Dalmatian that is a confirmed urate stone former.

The morning feed consists of one egg, half a cup of ricotta cheese, half a cup of pureed fruit such as apples, peaches and melons, three quarters of a cup of hot water and 2 or 3 chicken necks or wings or half a turkey neck.

In the evening the dog was receiving half a cup of minced [or ground] raw chicken including the bones and skin, half a cup of rice or a baked potato or sweet potato [which could also be boiled and mashed], one cup of pureed vegetables, three quarters of a cup of hot water, two tsp to one tablespoon cold pressed oils, one B 50 complex, 400 iu vitamin E, 1 kelp tablet, one tsp cod liver oil and 2 fish oil capsules.

Once a week the evening meal is 1/4 cup ground chicken, 1/4 cup ricotta cheese, 1 oz liver. The rest of the meal stays the same. Treats are sliced fruit or vegetables.

It is extremely important to monitor a Dalmatian when starting the diet particularly if there is evidence the dog may be a stone former, i.e., where there are crystals in the urine. If you have not already done so, have a urinalysis done before starting. Dipstick the urine several times a week to check the pH is neutral and have a monthly urinalysis for the first few months.

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