

BFCA *Health Times*

BFCA Health Committee:

Lisa de Camps, Paula Hendricks, Larry Letche DVM, Vickie Halstead, Nancy McDonald, chairman, Anne Jones, consultant

Editor: Nancy McDonald

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Research Sponsorship

Through monetary donations to the health fund from BFCA members and other persons and from fund raising efforts of the Health Committee supported by BFCA members and others, funds are available to support scientific research benefiting the Bichon Frise. BFCA has given the responsibility of selecting these research projects to your Health Committee. Your committee takes this responsibility seriously and judging which ones to support is not always easy.

The criteria the committee follows is the project must be true scientific research; it must be done in an accredited institution; and of most importance, it must be of benefit to the Bichon Frise. All the projects reviewed by the health committee are scientific and at outstanding universities and many projects are extremely interesting, but few directly research problems affecting the Bichon Frise. When this year's grant proposals arrived from AKC/Canine Health Foundation, there were interesting ones and a few that could benefit the Bichon, but yet, the committee members were hesitant to commit to any single one.

Then information was received from Morris Animal Foundation about a study, "Understanding the Genetic Basis of Urinary Stones" in the Bichon Frise as well as Yorkshire Terriers, Lhasa Apsos, Shih Tzus, Pomeranians, Malteses and Miniature Poodles. Since the number four disease in Bichons is urinary stones, this study met all the criteria

for BFCA support. With approval from BFCA Board of Directors, the co-sponsorship of \$3000 was donated toward this study. As a co-sponsor, BFCA will be recognized on the Morris Animal Foundation website, as well as receive regular updates (typically bi-annually) on the study. Because Bichon Frise is a breed used in this research, your participation in this research is needed if you have a Bichon with a history of calcium oxalate stones or if your Bichon has never had calcium oxalate stones it may be used in the control group. The synopsis of the study and clinical trial information is here in Health Times.

Understanding the Genetic Basis for Urinary Stones

Dr. Ned Patterson, University of Minnesota, D12CA-031

Total Study Cost: \$180,215

Urinary stones are common in dogs, especially in Miniature Schnauzers, which are 10 to 20 times more at risk than other breeds. Surgical removal of the stones is usually the only cure for this painful disease. Preventive measures are lacking and recurrence rates are high. Pedigree analysis of Miniature Schnauzers enrolled in a previous pilot study revealed substantial familial associations for urinary stones and high rates of the disease independent of diet or environment. These previous findings suggest that there may be an underlying genetic basis for urinary stones. The current study will evaluate the DNA from Miniature Schnauzers and seven other breeds at high risk for developing urinary stones: Yorkshire Terriers, Lhasa Apsos, Bichon Frises, Shih Tzus, Pomeranians, Malteses and Miniature Poodles. Researchers from the University Minnesota hope to identify a chromosome area associated with the disease trait with the goal of developing a genetic screening test for the disease. Results from this study will also help veterinarians select specific drugs or diets to prevent urinary stones in the breeds most prone.

Dr. Patterson is currently enrolling dogs for this study. The following information is posted on his University website:

[Genetic Basis of Calcium Oxalate Stones in High-Risk Breeds](#)

Current Status: Active and enrolling.

Principal Investigator: Ned Patterson, DVM, PhD

Contact: Dr. Eva Furrow E-mail: furro004@umn.edu

We are looking for certain breeds of dogs to help determine the genetic basis for developing calcium oxalate urinary stones. Your dog may be eligible if he/she:

- is a purebred Miniature Schnauzer, Bichon Frise, Shih Tzu, Yorkshire Terrier or Miniature Poodle
- has a history of calcium oxalate stones (Case group)

OR

- is at least 8 years old and has never had calcium oxalate stones (Control group)
- is not currently receiving any steroid medications (ex. prednisone, dexamethasone, methylprednisolone) or diuretics (ex. Lasix, hydrochlorothiazide)
- has *never* been diagnosed with Cushing's Disease

We will perform free blood work (mini kidney and electrolyte panel) and urine tests for all dogs and abdominal x-rays for Control group dogs (with no history of stones). We will also compensate owners \$25 per dog for participation in the study.

The study requires one visit to the VMC for these non-invasive tests and collection of a small sample of DNA.

If you are interested in the study, please contact Dr. Furrow at 612-625-6222 or furro004@umn.edu.

For more information on our Small Animal Medicine Department.

<http://www.cvm.umn.edu/vmc/aboutvmc/smallanimalspecialties/home.htm>

A Previous Stone Study

In 2009, BFCA supported a study investigating the cause of calcium oxalate stone, "CHF Grant: 01363-A: comparison of Vitamin B6 levels in a Breed (Bichon Frise dog) Predisposed to Calcium Oxalate Stones versus Health Dogs". This study was finished in 2011 and the report follows.

Canine Health foundation Grant Progress Report Review

Grant: 01363-A: Comparison of Vitamin B6 levels in a Breed (the Bichon Frise dog) Predisposed to Calcium Oxalate Stones versus Healthy Dogs

Principal Investigator: Dr. Albert E Jergens, DVM, PhD
Research Institution: Iowa State University
Grant Amount: \$12,960.00
Start Date: 11/1/2009 End Date: 4/30/2011
Progress Report: 18 month
Report Due: 4/30/2011 Report Received: 9/30/2011

Recommended for Approval: **Approved**

Original Project Description: Calcium oxalate (CaOx) urinary stone formation is a frustrating, devastating disease that is increasing in frequency within the canine population. Sequelae of stone formation are blockage and rupture of the urinary tract, pain, urinary tract infections, and kidney failure. Management of CaOx stones is generally unsuccessful and invasive removal is required. Approximately 50% of canine patients have recurrence. Studies from other species support the hypothesis that vitamin B6 may be involved in the mechanism of CaOx formation. In other species, decreased concentrations of vitamin B6 exist in patients with these stones despite balanced diets. Affected humans and rats supplemented with vitamin B6 have decreased stone formation and recurrence. The Bichon Frise is predisposed for this stone, and of all urinary stones it is the number one type in males and number two in females. Currently, B6 deficiency in dogs has not been investigated. We have validated a method for measuring B6 in dogs. Evaluation of this vitamin concentration in Bichon Frise may serve as a useful step in the advancement of medical therapy and prevention for these patients.

Grant Objectives: **Objective 1:** A valid and reliable vitamin B6 HPLC assay will be created and used for assessment of serum levels in dogs. **Objective 2:** Determine if differences of vitamin B6 levels exists between dogs affected with and not affected with CaOx urolithiasis exist in dog breeds predisposed to this disease. **Objective 3:** To identify areas of interest to direct future research efforts in the area of canine CaOx urolithiasis

Publications: J Clemans, P Imerman, J Phillips, K Deitz, A Jergens. Development of a High Performance Liquid Chromatography Serum Vitamin B6 Assay in Canines with Calcium Oxalate Urolithiasis (res abstract). J Vet Intern Med 2010

Report to Grant Sponsor from Investigator: Calcium oxalate urolithiasis represent the second most common canine urolith in North America. As in humans, these stones have a high rate of recurrence with a suspect genetic predisposition. The risk factors for disease are poorly understood and current medical management does not preclude stones from recurring. Vitamin B6 deficiency is a risk factor in humans with calcium oxalate uroliths but this vitamin deficiency has not been evaluated in dogs. The goal of this study was to develop an assay to detect Pyridoxyl-5-Phosphate (PLP) (active form of vitamin B6) in canine serum and to assess the impact of vitamin B6 concentrations in dogs with and without calcium oxalate stones.

A high Performance Liquid Chromatography (HPLC) assay was developed to measure vit B6 using pooled canine serum from the ISU VMC clinical pathology laboratory. Serum from dogs with calcium oxalate uroliths and healthy dogs was obtained, light protected, and stored at -80F with 12 hours of collection. Serum

concentration of PLP was obtained using a standard curve with known concentrations of research grade PLP in water for each run. Recovery was also measured for each run using a known concentration of PLP in serum. Runs with recoveries lower than 80% were not included in data analysis. For initial assessment for differences in serum concentration between normal versus diseased dogs, dogs were separated into CaOX group (3 dogs) and non-CaOX group (4 dogs).

Vitamin B6 concentrations in canine serum were unstable at 2C, and -15C, and when stored at these temperatures there was rapid loss of 20% Vit B6 concentrations in two days and 50% at 14 days, respectively. When stored at -80C for 14 days, approximately 100% of the measurable analyte remained. Freezing and thawing of sera samples resulted in minimal recovery loss after three cycles. This pilot study revealed that the dogs with calcium oxalate urolithiasis were significantly depleted (p value <0.05) in vitamin B6 concentration than those without stones, with mean concentrations of 29 ppb (SD+18) and 123 ppb (SD_70), respectively for each group. Preliminary results comparing serum concentrations of dogs of a predisposed breed (mean levels 55ppb) to dogs not of a predisposed breed supported the contention that a lower vitamin B6 concentration may be a risk factor for Ca Oxalate uroliths in susceptible breeds.

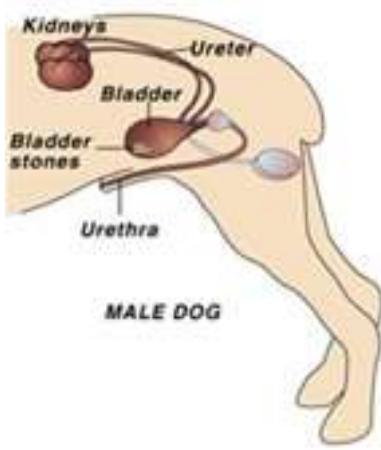
An HPLC assay was successfully designed and utilized to reliably measure serum vitamin B6 levels in dogs. Results indicate that dogs with calcium oxalate urinary stones have a vit B6 deficiency relative to dogs without urinary stones. Moreover, some dog breeds reported to be at risk for urinary stones were shown to have reduced serum vit B6 as compared to dogs without urinary stones, suggesting that this may affect disease status. Reduced serum vitamin B6 concentrations may prove to be a risk factor for development of calcium oxalate urinary stones, and further clinical evaluation in a larger population of dogs having spontaneous uroliths is warranted.

To put icing on this cake of “stone studies”, Vickie has written a concise, informative, and helpful article on bladder stones and crystals. She gives not only medical information but lots of practical advice.

URINARY STONES AND CRYSTALS

Vickie Halstead RN, CVNS, CCRN, CEN, CLNC

Bladder stones (uroliths) plague almost all breeds of dogs, but are more prevalent in some breeds including Bichons, being the #4 disease for the breed. Stones develop due to an excess of some mineral that solidifies in the bladder, rarely in the kidneys. These stones must be dissolved or removed, may pass out with the urine via the urethra, or may lodge in the urethra. Stones can recur at a rate of about 30-50% if vigilant preventive measures are not followed. The presence of crystals in the urine upon examination is a precursor to developing stones. Crystals and/or stones irritate the lining of the urinary tract, causing pain and blood in the urine and possibly obstruction of urine flow. The most common signs are frequent urination, straining with urination, and licking the genital area. There are several types of stones determined by their composition. The most common type of stones found in Bichons are Struvite and Calcium Oxalate.



For additional information, read the articles on our web site www.bichonhealth.org on urinary stones under the heading Kidneys/Bladder, where you will also find the Powerpoint slides from a presentation in May of 2010 at the Bichon national specialty by Dr. Jessica Clemens.

If your Bichon is diagnosed with bladder stones, you must discern from your veterinarian which type of stone your dog has in order to properly treat and prevent stones. Either type of stone can be visualized on an x-ray. If a stone is removed or is passed, it can be analyzed to determine its consistency. The presence of crystals in the urine is a precursor to developing stones, allowing actions to prevent formation of stones. However, you need to know which type of crystals is present to determine the proper treatment.

In the past the BFCA health committee has encouraged breeders to test the urine prior to breeding because it reflects the status of several organs of the body—diabetes, kidney disease, liver disease, dehydration, bladder infection, and blood caused by stones. Not only do the presence of struvite or oxalate crystals indicate that stones may develop, but the presence of urate crystals in the urine provides early detection of liver shunt, a genetic disease that is prevalent in Bichons. When your veterinarian evaluates a urine specimen from your dog, ask for the routine urinalysis plus the urine sediment evaluation for detection of struvite, oxalate and urate crystals.

To obtain a urine sample that will provide accurate testing, collect it in a clean and dry container and deliver to the veterinarian immediately if possible. If not, refrigerate the sample but do not freeze. Collect urine by using a pie plate or soup ladle as the dog urinates. If a sterile sample is needed, your veterinarian can use a small needle to obtain the specimen by accessing the bladder through the abdominal wall, or use a catheter.

Struvite stones/crystals are not considered to be hereditary, are usually caused by bladder infections, and are more common in females. However, the high incidence of these stones in some breeds of dogs, including Bichons, suggests a familial tendency, meaning that some breeds have a genetic predisposition to developing urinary tract infections.

The urine needs to be acidic ($\text{pH} < 7.0$) to prevent struvite stones from developing, to dissolve existing stones, to eradicate crystals, and to fight the growth of bacteria. Your vet will put your dog on a special diet to help acidify the urine. Also, giving Vitamin C supplements will help acidify the urine and prevent bladder infections. I recommend 1000 mg. per day divided in 2 doses with meals, but start gradually to prevent diarrhea. You can find Vitamin C crystals (powdered) at health food stores or online. Another theory is to give the amino acid DL Methionine, which is contained in supplements that help reduce the pH of the urine and may also prevent yellow nitrogen burns to the grass from urine. In addition, some dog food companies make multivitamin supplements that can alter the pH of the urine.

A bladder infection is the cause of the struvite crystals or stones, so the infection must be treated aggressively with the correct antibiotic. If your veterinarian analyzes a urine sample and finds no signs of infection, then further testing is needed to find the bladder infection, which does exist. This is accomplished by obtaining a sterile sample via a guided needle into the bladder through the wall of the abdomen that can be done without sedation. This sample is sent out to a laboratory that will do a *culture* to find out what bacteria are present, and a *sensitivity* to determine which antibiotic will kill the particular bacteria present in the urine. The results will be available in 3-4 days. If the bladder infection is not cured, the crystals will return or persist, and eventually develop into stones. The urine and surface of a stone may be sterile after a short run of antibiotics, however bacteria may reside below the surface of the stone if the incorrect antibiotic is prescribed.

To prevent future bladder infections, which can also lead to kidney damage and struvite stones or crystals:

1. Keep the vulva or penis clean and clear of hair, and don't allow your dog to urinate in dirty areas.
2. Allow the dog plenty of opportunities to urinate. Holding urine for long periods stimulates the growth of bacteria and struvite.
3. Encourage fluid intake by keeping fresh water (not softened) available at all times and feed a moist food (> 80% moisture) or the raw diet. Adequate hydration will help flush crystals and bacteria out of the kidneys and bladder.
4. Give Vitamin C 1000 mg per day, which improves immunity and makes urine acidic. Start with 250 mg. per day, gradually increasing the dose to prevent diarrhea. There is a product that is a combination of cranberry and Vitamin C that is available online.
5. Provide an optimal diet of either raw or home cooked foods with supplements that include a multiple vitamin, fish oil, cranberry juice capsules, and probiotics to support the immune system.
6. Some dogs respond to ½ tsp. of D-Mannose daily, a simple sugar that helps fight urinary tract infections and can be found online.

In most cases Vitamin C, vigorous treatment of the bladder infection with the correct antibiotic, optimal hydration, and temporarily a prescription diet (makes the urine more acid and pulls more fluid through the kidneys) will dissolve struvite stones preventing the need for surgery. In my experience, once struvite stones/crystals are resolved there is no need to stay on the prescription diet, but you must continue the Vitamin C, keep the dog well hydrated and strive to prevent bladder infections. **Do not give Vitamin C to dogs with calcium oxalate stones.**

Calcium oxalate stones/crystals are more common in males and are hereditary, so please alert your breeder. However, the diet and water provided can contribute to the development of these stones—a diet high in calcium, inadequate intake of water, and giving water from garden hoses or softened water from the faucet. The genetic cause of calcium oxalate stones is a lack of an enzyme to process oxalates, which are the product of metabolizing some foods and are produced by the liver. Oxalates do not circulate freely in the body, so they have to combine with other ions in the blood such as sodium or calcium to prevent excretion out of the body via the urine. If the calcium level is high, the oxalate will combine with the calcium, forming an insoluble crystal that can grow into a stone. If the crystals develop into stones that are too large to pass they may need to be removed surgically, since they cannot be dissolved. **Reduced serum vitamin B6 concentrations may prove to be a risk factor for development of Calcium oxalate urinary stones.**

To prevent recurrence of calcium oxalate stones, a special diet and Potassium Citrate prescribed by your vet is needed to keep the urine alkaline (pH > 7.0), as well as **avoiding Vitamin C** that will acidify the urine. Your vet will put your dog on a special diet to maintain alkaline urine and add moisture to the diet. In addition, calcium supplements and several foods must be avoided: salmon, bologna, sardines, dairy products, spinach, broccoli, beans, tofu, asparagus, celery, corn, tomatoes, green peppers, green beans, squash, berries sweet potatoes, oranges, apples, peaches, pears, pineapples, citrus peel, nuts, wheat germ (see this article on our web site <http://bichonhealth.org/HealthInfo/UrinaryStones.asp>). Serum levels of vitamin B6 should be monitored to determine if supplementation is needed.

Combinations of struvite and calcium oxalate stones have been found in some Bichons. First the dog develops a small calcium oxalate stone, which then becomes encased with struvite during a bladder infection. In this case the infection must be treated, and then use treatment for calcium oxalate stones since that is the origin of the stone.

Water: What your dog drinks can play a part in developing either type of stone. Optimal water is reverse-osmosis filtered hard water. Avoid water from the garden hose or **softened** water from the sink faucet--it contains salt and can contribute toward calcium oxalate stones. Assuring that your dog drinks adequate volumes of water is key to **prevention and treatment** of bladder stones. Place water bowls in several strategic areas of your home. Keep the water fresh and cool to improve the taste. Ceramic bowls keep the water cooler longer. Also, provide a high moisture diet (>80% moisture).

Diets: Most vets prescribe Hills CD diets for dogs with stones, but there are better alternatives. We have received reports of Bichons with reactions to this food, and the ingredients are poor. Solid Gold has a good food for struvite stones called Berry Balance, and Royal Canin makes a food called Urinary SO with better ingredients than Hills. I strongly recommend a **holistic veterinarian** to treat a dog with stones. Some recommend a Chinese herb and saw palmetto to help pass the stones. Also, research supports giving lemon juice and pedialyte daily to reduce calcium oxalate stone formation.

To find a holistic veterinarian: <http://www.holisticvetlist.com>

Websites with good information on calcium oxalate stones and diet changes:

<http://www.b-naturals.com/Dec2004.php>

http://www.marvistavet.com/html/bladder_stones.html

Read this detailed article about struvite stones from the stone expert, Dr. Osborne:

<http://veterinarynews.dvm360.com/dvm/article/articleDetail.jsp?id=90577>

IMPORTANT DIET INFORMATION FOR DOGS WITH CALCIUM OXALATE URINARY STONES

Anne Jones RN, BSNE

High to very high (and to be avoided!) are most nuts, including peanuts and peanut butter; beets, okra, fried and sweet potatoes; sesame seeds, tahini (sesame paste);rhubarb, spinach, Swiss chard, collard greens, mustard greens, canned tomato paste; legumes (black, white, great northern, navy and pink beans), soy products (soy milk, soy burgers, soy yogurt, soy nuts, soybeans, textured vegetable protein); fruits (dried apricots, figs, kiwi); grains (barley, cornmeal, cream of wheat, whole wheat flour, whole wheat spaghetti, buckwheat flour, brown rice flour, wheat bran), POPCORN

Chocolate is highly toxic and very high in oxalates. Also grapes and raisins. Both should be avoided with all dogs.

Moderate oxalate foods should be carefully moderated but may be fed in small amounts along as there is calcium in the meal.

Pistachios and walnuts; vegetables (carrots, celery, green beans, boiled white potatoes WITHOUT SKIN, summer and winter squash, tomato sauce and tomatoes). Red potatoes without skin (and all potatoes without skin) are lower in oxalates when peeled. Legumes (kidney and pinto beans). Fruits (blackberries, blueberries, mandarin oranges; mangos, prunes). Grains (bulgar wheat, brown rice, elbow macaroni, egg noodles, spaghetti, pasta (if not made with whole wheat flour), rye flour, oats and oatmeal.

Low oxalate foods (safely fed but better when fed with calcium) would include the remaining common foods, though the usual good sense should be used in feeding all animals. Sugar is not advisable even though it is a "safe" food. Some artificial sweeteners are known to be toxic and must be avoided.

There are more complete lists on line. Just type in "high oxalate foods" to research.

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January 21, 2012

CHIC Report by Paula Fourth Quarter 2011

SUMMARY OF TOTAL CHIC NUMBERS AND UPDATES FOR BFCA TO DATE

ORIGINAL QUALIFIERS	382	July 2007
TOTAL NEW QUALIFIERS	697	December 2011
UPDATES	52	July 2007
TOTAL UPDATES	241	December 2011

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January 21, 2012

CHIC 5 STAR AWARDS

The BFCA Health Committee has issued the first of the CHIC 5 Star Awards to the following:

Merrymaker's Living Doll	Cindy Morey	11/15/09
Merryell Absolutely Spellbound	Mayno Blanding	11/29/09
Jasme Raggedy Ann	Mayno Blanding	11/29/09
Victoire's Cheers to Austin	Vickie Halstead	11/30/09
Victoire L'Amour Champagne Lace	Vickie Halstead	11/30/09
Victoire Juniper's Hot Tamale	Vickie Halstead	11/30/09
Victorie's Norwegian Red	Vickie Halstead	11/30/09
Victoire Melodie's Bleu Reign	Melodie Michel	11/30/09
Victoire Diamond Rio Citrine	David & Darlene Scheiris	12/02/09
Mybliss Galway's Irish Imp	Nancy Noonan	06/06/10
White Shadow Galaway Hide N'Seek	Nancy Noonan	06/06/10
Allure's U Chenoa Joe	Lisa Des Camps	
Victorie Gerie No Lemon Gemstone	Vickie Halstead, Mary Wangness	11/30/10
Paray Parasol of Knollwood	Susan & Dean Anneser	12/1/10
Paray's Secret Encounter	Susan & Dean Anneser	12/1/10
Merrymaker's Southern Charm of Bibelot	Cindy Morey	1/13/11
MyBliss Petite Coquette	Loretta McDonald	3/16/11
Jabree's Jack of Hearts	Nita & Mark Gryan	3/23/11
Bibelot's Sugar Plum Dancer	Paula Hendricks	6/6/11
Bibelot's Purple Heart O'Mine	Matt & Paula Abbott	9/12/11
Jabree's Bellefleur La Jolie	Nita & Mark Gryan	12/19/11
Bijone's Mon Cheri Music of the Nite	Susan Brockett, Barbara Shaffer	1/4/12
Mybliss Dandy Devil Wears White	Nicole Shaffer	
	Myra Wotton, Jan & Alan Shetzer	1/5/12