

FORUM ON RENAL FAILURE AND PELLETED DIETS

The following discussion occurred on the BirdMed Discussion List from 11th to 18th September, 2009. The topic of discussion was "Kidney Disease in Cockatiels" (*Nymphicus hollandicus*). The discussion is reproduced with the permission of the List Moderator.



Hello Friends,

Cockatiels are popular pets in Brazil. I have seen cockatiels with kidney diseases (gout) a lot since one year ago. What I have observed is that all the birds with gout clinical signs eat only extruded food. I have always told owners to give the birds extruded food in stead of seeds. I am a consultant in a extruded food factory so I think I am now in an embarrassing situation with my clients.

I have always thought that this food was more balanced than seeds. So the factory is changing all the production of food to cockatiels, reducing its Calcium, Protein and Sodium quantities. But even like this, the birds are showing clinical signs of the disease (polydipsia and polyuria) with a high level of uric acid in the blood. I am telling the owners not to give extruded food to the affected birds, even if the diets is not well balanced. Now I am completely lost and I do not know what to do anymore to give a guarantee a balanced food intake to this animals.

Is it really due to genetics?

Is there something I can do to solve this problem?

Does anyone have the same problem?



This has also been observed in the US. Scott Echols has discussed this a number of times in his presentations. Based on my research in budgerigars, I feel that calcium is the major cause of this problem. Calcium concentrations of 0.7% will cause renal disease in budgerigars and this is the common concentration in most pelleted diets. From our research I found that 0.35 to 0.4% was probably an optimal dietary calcium concentration for budgerigars. If this translates to cockatiels I do not know, but suspect that it may.

Vitamin D is much less likely to be a problem, but lowering it to 500 IU/kg still provides adequate Vit D3 for growth and reproduction so if your diet contains more than this reducing it somewhat should not be a problem.

I have not examined the impact of protein or sodium on renal function.



We see it here in Australia as well. Usually it is colour mutation cockatiels fed exclusively a formulated diet i.e. they refuse to eat any vegetables at all.

There is also a theory that it may be a Vitamin A excess, causing hyperkeratinisation of the ureters. Debra McDonald and, I think, Prof Klasing feel this is the case.

Whether it is the calcium or the Vitamin A causing this problem remains to be determined. Either way, I feel some caution is warranted in using these diets in budgies and cockatiels and, if the bird won't eat vegetables, it should be fed a mix of seeds and pellets.

By the way, I don't feel we can blame any particular brand for this problem - I have seen it occur on several diets, and I know colleagues in the USA have seen it on diets that are absent/rare in Australia.



This is a topic that we deal with daily as a busy pet bird practice. My current recommendations are to avoid pellet diets in budgies, cockatiels and lovebirds. For years and years (15+?) we have advised nuttall cakes [sic] (Lafeber vet brand) for many small pet birds. As pellets became popular we did see increased problems w/ gout and elevated uric acids on birds fed a primarily dry pelleted diet. We also noticed problems with conversions as owners struggled to get birds on the pellet diet. Many O's didn't always supplement w/ veggies and some birds didn't accept them. So, we went with what seemed to work well.

I have been very happy with the sustainable health that comes with the cakes. The conversion is easy and some seed apparently supports GI function. They are economical and stable to store. Clients and birds love them. I have always wondered whether it is simply the higher moisture content of the food that ensures its success or some magical nutrient balance.

I'm glad this topic is on the table.



Diets containing calcium concentrations as low as are found in seeds (0.2%) will cause metabolic bone disease in budgerigars that are breeding.

Have you had histopathology done on any of these birds? There are other things such as toxins that can cause renal failure and it is possible that these could be incorporated into a pelleted diet. Carry over from another product that they are milling for another species of animal could potentially be a problem.

Another thing to consider, is the content of the diet. What are the materials being put into the diet?



Thank you for the quick answers.

The pelleted diet we were using has 0,4% Calcium (we have reduced it to 0,2% and intend to diminish it to 1%).

The sodium quantity has also been diminished and the vitamin a is almost 0, because we give them caroten.

The factory is trying to make a natural diet, with no complements (vitamins and minerals).

I am using allopurinol and diet with 11% protein, 0,1% Calcium and low sodium as the treatment. I have seen improvement in some cases.

What scares me is the big number of cases and a far perspective of an better treatment. I have read several times " Veterinary Clinics of North America: Exotic Animal Practice " reports about that but I am still worried.

The affected birds are maintained in a heated place and I am giving them dipyrone for the pain. In several cases the birds were showing leg paresis, probably due to the kidney nerves(??).

Well, after all, I can see that it is not a isolated problem..



Is Gluten from China used as the binder in the pelleted product? There are many possibilities in prepared high temperature products that cause inflammatory reactions, such as acrylamide release from high pressure/temperature of carbohydrates which creates an inflammatory cascade, renal problems are likely.

Gluten was contaminated with melamine and we are possibly still having these effects as the melamine contamination was widespread through Nestle and other companies, indeed many pet food industries possibly/likely were affected.

Storage of grains also have storage mites, creating another source of allergen/inflammatory cascade. Radiation of food products in Australia recently led to the Orijen neurological problems in cats, also an inflammatory/apoptosis problem, see the last issue of the AVJ.

Fresh, organic is always going to be best, but delivery is an issue. Visit Bayu and Nusa Penida and see how they feed their Bali Starlings and other birds, so much love and care and fresh picked and cooked foods, with hand grown meal worms sprinkled on top, its the way nature intended.

HOW to deliver that to busy executive/workers that keep birds and don't want to prepare papaya? I imagine frozen patties?

Bruce Symes in Victoria has a great prepackaged fresh product I am stock for dogs and cats and the animals are doing great on it. It has a long storage in fridge life, not sure how it is preserved.



Another question raised recently by experiences with cat food and cats with unusual neurological disease is that of whether or not the "food" is irradiated at any stage before consumption.



These problems have been seen with locally made, non-irradiated food, and long before gluten was been imported from China.

I don't think we can look to recent experiences with imported cat food as a source for these problems.



I don't have a reference for these comments but it seems that the last discussion I heard about this concerned the Vit d 3 levels and excessive amounts for the needs of these birds. It was suggested that these birds be given access to correct spectrum UV light in order to make their own under their bodies natural regulation.

Personally my cockatiel hens used to die from these issues at 3-5 years of age and I no longer feed just pellets; I now feed seed and pellets and other fresh things and they no longer die so young.



I believe that there are more involved factors than just the vitamin A, D and Calcium.

Certainly pelleted food with low calcium leads to problems in the repro season. The one I am using now is just for treatment and I do not think it would be nice for normal birds. That is an advantage in working with a food factory, we may have a lot of ideas and possibilities.

This pelleted food with 0,1 calcium, zero vitamin A and low sodium, has decreased the uric acid to normal levels in the birds that eat it. So I believe we are going to the right direction.

We have offered food with 0,2 calcium to the control group, and they have reproduced normally.

In all the birds I have treated I could see polyuria and polydipsia, high levels of uric acid and normal calcium and phosphorus.

Pathology findings:

Lymphoplasmacytic inflammatory infiltrates and interstitial heterophils moderate, multifocal to coalescing. Intense and multifocal tubular ectasia. Proliferation of discrete and multifocal interstitial

fibroblasts. Tubular basement membrane. Mineralization is discreet and multifocal. Glomeruli mesangial hypertrophy two parietal and visceral intense.

The cases that are fed with the food I work with tend to be chronic. The ones that are fed with other brand's food show heart and proventriculus mineralization and much more acute kidney problems.

Proventriculus: mucosa with intense and multifocal mineralization. Heart: cardiomyocytes with mild and multifocal mineralization. I believe that protein, calcium and vitamin supplements can worsen the disease (without prescription).

The factory has a strict control on fungal toxins and bacteria. This month we have also tested heavy metals.

As far as I know there is no gluten in this food. The sodium acts in extra-cellular liquids, increasing the water intake, what makes the kidneys to work harder to maintain the osmotic balance. The potassium acts in the intra-cellular liquids balance. We are working hard to make a good food to cockatiels. It is not that simple but I can not recommend seeds to these birds. It would be like saying that we are incapable of producing a perfect food for them.



As far as I know the perfect food for humans has not yet been invented. Bird food might be easier - but maybe not.



I'm not a nutritionist but would like to add my contribution on this interesting topic. First thought is that a perfect bird food cannot exist because every species is different and every individual lives in specific conditions, so one single food cannot match every possible bird. Some foods are very good and give excellent results with a variable number of species, but I don't believe they can be perfect as a sole diet for every species of birds.

Said that, it's curious that the species most plagued by this kidney problem are the granivorous from desertic zones like cockatiels and budgies: might the fact that they drink very little play a role in that, being the problem primarily linked to chronic dehydration?
Just my two cents...



In long living small psittacine birds the kidney is one of the organs most likely to fail.

I have never seen diet versus longevity discussed (no fatty liver discussion intended) anywhere. When discussing budgies the tumour issue is common in kidneys.

Cockatiels are different. How long do they live in the wild? Are longevity parameters known?



'Perfect' is a too bad word ... (Of course, my English is not perfect). Water intake is higher when the feed is extruded.

In fact, if you extrude a mixture of seeds the water intake increases compared to the fresh mix.



How can the dehydration occur if the birds have water "ad libitum". What is the way?

I do not think the water intake is the problem, because this increase also occurs with other birds, and it is happening only with cockatiels and not with parakeets and lovebirds.

I treat 5 years old cockatiels on average, some are 10 years or more. This problem with the diet reduce to cockatiel lifetime to 1 to 3 years. I don't know what is the cockatiel's lifetime in wild.

Thanks all for your help!!



My hypothesis is mutated from small mammal medicine, where is common opinion that ferrets and cats fed exclusively or mainly on dry kibbles just won't drink enough (even though they surely drink more than on a wet diet) to allow their kidney to work properly, therefore the high prevalence of kidney failure in these species.

I would think that cockatiels and other desert birds (what about neophema parakeet, to say another one?) are not "programmed" to drink much, so they might not assume enough water even if available all the time.

I want to underline that I'm not advocating seeds versus formulated diet, I strongly believe that formulated diets have been a big step forward in avian management: but still they might not be the ultimate answer for every species.



I'm a big fan of pellets and use them extensively in my practise. When eating pellets, most birds we deal with are far more likely to eat a wider range of foods such as vegetables and fruits. When these are offered, the birds consume them better then they did when on seeds. This introduces a range of benefits such as increased water intake and perhaps micro-nutrients they might otherwise not get. Seed can be offered as a reward for training rather than fed ad-lib so can still be a part of the diet.

Perhaps the issue is trying to rely solely on any one product to fulfill all the nutritional needs of the bird. It's a common trap of convenience for owners that we should guard against. Especially while so much research on avian nutrition is still ongoing. More fun for the bird too!



I support the previous comments and add...

In my opinion... A seed diet by itself is incomplete no matter how many varieties of seeds are in it, especially if it is offered in quantities in excess of the birds' daily needs... scatter, scatter, mess, mess, pick out the lollies principle.

There are very few species of birds if any that rely totally on seeds for their nutrition ... over their lifetime..... in the wild ... in Nature undisturbed by agriculture, logging etc... educate me otherwise.

So what do seed eating birds also eat.... if you don't know find out..

The commercially produced seeds in the great majority of commercial bird seed mixes are usually genetically modified and rarely match the species of seeds eaten as above. This also applies to those in commercially formulated pelleted diets.

A pelleted diet by itself is incomplete no matter how well formulated it might be...

Many birds kept captive can adapt survive and some can even successfully breed year in year out on some of the diets we offer, yet if they were complete, we would not be able to frequently perceive health benefits from supplementing many birds with various nutraceuticals etc.

A take home principle is a little of a lot rather than a lot of a little. A little of a lot for supplementing a pelleted diet for mostly granivorous birds such as cockatiels and budgies could be 1-2 teasp total per day of finger nail trimmings sized pieces of dandelion, milk thistle, chickweed, plantain, silver beet, parsley, broccoli, cauliflower, endive, grated carrot, grated kumari, spinach, rocket, sprouted seeds (just a few of each grain), leaves and/or stems and/or green still succulent seed heads of various grasses such as kikuyu, buffalo, couch, perennial rye grass, rye grass, winter grass, umbrella grass, other small seeded grasses, and if there are aphids about, stir them into the mix as well. Find out what your birds like and then include a little of it in the mix.

For toys, chuck out everything rope and plastic including food and water containers, give them wide irregular natural perches of non-toxic trees and shrubs with bark still on... when the bark has been removed... guess what? It's time to replace the perch. Replace toys with fresh twigs of non-toxic trees and shrubs that they like nibbling on, and broad leaves of palms , rushes, tall grasses, in a small bundle, dipped in or sprayed with water as toys, bathes and activity generators.

Somewhere in all this we might also include a hunk of dry clay, some shell grit and some coarse bush sand or crushed sandstone.



I generally advise my clients to do the same as you except I give them half to one teaspoon of seed daily plus ad -lib pellets and most of the other foods you mentioned.

I am not sure about the effect or if genetically modified seed is really a problem. What I do say to

clients is that dried out northern hemisphere seed crops are only fed as they are easy to transport and birds like them, not because they are good for the bird.

Clients worry about feeding fresh grass as it may be "sprayed with pesticide" but whilst I agree I point out that commercial grain that is non-organic may have many pesticides on them from the commercial factory style farms so are not necessarily safer



Again, I appreciate this topic and the international response. From the pet bird perspective, we used to see gout commonly in seed only cockatiels and budgies. And we still see gout and related renal problems (high u/a, haemoconcentration as measured by pcv >57%) in pellet only birds, particularly those from arid climates. I have a case in the hosp (cockatiel 15yrs old) now w/ articular gout R foot only, u/a=47mg/dl, recently put back on "good" pellets 2 mo ago. Had previously been maintained on nutiancakes (sic). I'm not trying to sell anyone on Lafeber products, but have used the cakes successfully for almost 20 years. No success w/ pellets of same brand even though formula has changed several times. Again, my guess was that it was a function of water content. I will stay tuned to the discussion.



That makes sense: but couldn't be that those birds at least part of the year eat fresh rather dry seeds?



Yes, this is why water wise, the fact they eat only seeds, or only pellets should not be too much different. Even more: they should have more problems when only on seeds, since they are more unbalanced. In any case I am sure they should be trained to eat fresh items at least some months per year.



if we have a look into desertic species, it is true they normally are somehow programmed to drink little water, but for this reason, they normally have a kidney physiology which compensates for this lack of water intake.

Given that seeds have very little moisture, but pellets also are very dry, I don't think the problem is related the water intake. Or better, if it was, cockatiels and budgies should have kidney problems on seeds exactly as they have on pellets (or even more, since seeds are more unbalanced).



I always assume my clients are as lazy as me, and that if I set them a hard task, it won't get done. So my basic feeding regime is a good quality formulated diet (60%) and mixed frozen vegetables (40%). I tell them 'go for green and gold' – peas and beans, corn and carrot. I like the frozen vegetables

because they are very juicy when compared to 'fresh' vegetables and much more palatable. Avoid starchy vegetables like potato and cauliflower. Dark green leafy greens, and garden weeds like dandelion and milk thistle, a few times weekly.

I add seed when I want the birds to breed. It's spring here, and all my aviary birds are getting some sunflower seed daily to get them interested in breeding. It's the only time of the year they get seed.

Fruit is reserved for tropical parrots – South American, African and some Asiatic. Australian rainforest parrots such as King Parrots and Eclectus get it as well. I prefer more complex carbohydrate fruits such as passionfruit, guava, etc to apples and oranges. Cockatiels and budgies do not get fruit at all.

An all-seed diet is nutritionally unsound and potentially dangerous; so is an all-pellet diet. There is no single diet that 'fits all sizes'



I agree with providing vegetables to cockatiels. Even when feeding them with pellets, vegetables are important sources of fibre and carotenoids. They are recommended to all my clients

I believe in the Lorenzo's theory that the cockatiel has a kidney physiology that compensates the lack of water intake and can adapt to it.

Many poultry feed's factories in Brazil work with a single pelleted formula for several species (Cockatiels, conures, parakeets and lovebirds) - A BIG MISTAKE. We are developing a cockatiel's exclusive diet.

Offering seeds mix as part of diet , even after so many comments, I think is a mistake and a strong indication that something is very wrong in the formulation of diet pellets.

This is the case of nutiancakes (Lafeber??). I believe they do work! Unfortunately we don't have it in Brazil. I have visited Lafeber's website and I was amazed at the several options they have.



How can we balance the diet of a bird that selects the food, choosing colour, size and flavour? Certainly the cockatiels should eat mainly the seeds and not the pellets, and thus do not develop kidney problems.

I believe the birds that live in desert areas, have a very high capacity to absorb nutrients from the diet, because they have few options.

We know the extrusion process improves the absorption, this point is the focus the problem.

Our idea is not perfection, but something much better than the seeds mix, nutritionally better balanced.

The point is to create a quality food that is convenient for the owner. Most people choose cockatiel

as pets for lack of time and space. So, why not try to create a simple food, nutritionally balanced, for these animals.

From the social point of view: In big cities, with very busy people, the mixes of seeds, pellets, vegetables are not practical. They choose only seeds or only pellets, and now neither of them is a good food.

The other big problem: the owners are very concerned on these animals that like to be fed with other products (Egg food, Sand, Vitamins, etc), even when fed with pellets. In this setting, we must orient the owners so they will not make this mistake anymore.



Just to clarify, I always recommend abundant veggies with any diet but find most of my clients may comply sometimes. And everyone gets too busy too often and cockatiel veggies seem to be the first thing to go. Hence my fall back to an easy palatable diet that works. my recommendation is fresh organic, they love cilantro, and if frozen watch for added salt and treat as perishable food.



What do we all think and feel? With tongue in cheek, perhaps, can we inform our clients fully about what their pet birds really need to meet their nutritional, physical and emotional needs, and suggest that if they entertain the privilege of confining them to life to a cage, they might also entertain the responsibility of doing their best to provide for those needs, and, remind them there are other options such as simply attracting and appreciating wild bird and nature to where you live and work, or to grow some ivy in the expensive bird cage.... might need watering once every 1-2 months if pot is suitable! After all, if we loose a few clients because of this advice, there's still a lifetime of work educating and taking care of all those clients (and their birds) already with birds in cages.