

The Importance of Raw, Whole Foods

by Jason J. Crean, MS Bio, EdD

When I talk to bird owners, breeders, and zoo staff about nutrition, I often tell them that there is no 'complete' diet for birds. What do I mean by this? Basically, we cannot expect to completely replicate the wild diets to which our species have adapted. Even in the wild, many of the foodstuffs that were once plentiful are on the decline. So what do we do? We should offer as much dietary diversity as we possibly can in an effort to satisfy all of the bird's individual needs. Food in its raw, whole form is the best, most efficient way overall to cover all of the bases. In my personal animal husbandry, as well as the recommendations I give the zoos for which I consult, I provide whole food diets in a variety of ways.

Birds, like most animals, require carbohydrates, fats and proteins. Some birds have more substantial requirements than others when it comes to certain nutrients but in general, we can be fairly confident in what we offer is safe and beneficial. Raw, whole foods may take many forms, but the key is to offer unprocessed, unheated food in its whole form so that the nutrients are available to the cells that compose their bodies. Many oils fill the great need birds have for good, healthy fats. Carbohydrates found in fruit and vegetable matter are necessary for efficient energy expenditure. Proteins from foods like legumes and even edible insects can be a wonderful addition so that birds can get the protein they require.

I am often questioned about our birds' dietary needs and there are rarely easy answers. However, I do think it is safe to say that whatever food we offer must contain nutrients that are bioavailable. Bioavailability involves the nutrient being in a form that the body can readily absorb and use. Raw foods take the form of fruits and vegetables, oils, seeds and nuts (both dry and soaked and/or sprouted), legumes, teas and flowers, and other healthy whole food items. Food items in their whole form not only possess important vitamins, but also the compounds that help the body actually absorb them. This is a problem with many vitamin supplements that contain

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the primary nutrient, but not the associated compounds that help that vitamin to become assimilated into the tissues. This can also be seen with the different types of fats as some species better assimilate the fats found in plants over animals and vice versa. So let us start with fats since our birds require a great deal for optimal physiological functioning.

The F-word: Fats are a good thing!

Essential Fatty Acids (EFAs) are often referred to as the 'good' fats and avian requirements are substantial though all fats serve a vital purpose in the diet. EFAs are critical for normal reproduction, feather production and a healthy immune system. Animals require these fats to properly absorb vitamins like A, D, K, and E. These fats must be supplied by the diet, but can be a bit difficult to offer because of their sensitivity to heating, processing, light and even agitation. When obtaining healthy oils for you and your birds, I always recommend purchasing them from the refrigerated oils section at a health food store or grocer.

Plant oils high in Omega-3 (alpha-linolenic) fatty acids are needed for normal cell reproduction which is needed to replace old and dying cells and repair damaged cells. They are also needed to produce the many hormones that regulate numerous physiological processes. They also help regulate the production of eicosanoids, molecules that help maintain a normal immune response like that of inflammation. A deficiency in Omega-3 may cause stunted growth, issues with vision impairment and motor incoordination, and immune dysfunction as discussed above.

Omega-6 (linoleic) fatty acids are more readily available in the diet as our birds can easily obtain a sufficient amount in seeds, soy, grains and some nuts. Though I do not recommend soy due to its high levels of phytoestrogens, these fatty acids are required for healthy skin and strong feathers, normal reproduction, and maintaining normal organ function. Deficiencies in these fats may lead to a failure to gain weight, degeneration of liver and kidneys, behavioral disturbances, inability of wounds to heal sufficiently, infertility, poor or abnormal feather development and dry, scaly skin. It's all about balance when it comes to Omega-3 and Omega-6. Omega-6 fatty acids increase the normal inflammation response of the immune system and Omega-3 fatty acids decrease inflammation. When this balance is not reached, the immune system is either underactive or overactive, and neither condition is desirable.

Omega-3 can be a bit more difficult to feed in the diet, but ideal sources include Brazil nuts, pecans, walnuts, hazelnuts, pine nuts, and seeds like pumpkin seeds and flax seed. Flax seed is quite fibrous so I usually recommend flax seed oil as a more bioavailable alternative to feeding the actual seed. Other oils like borage and primrose oil can also be quite high in Omega-3 and can be offered in the same way as any




other oil. One of the best ways for parrots to get their Omega-3 is nuts. Tree nuts are a fun, healthy snack that are low in saturated fat and cholesterol free. They are an excellent source of protein, fiber, trace minerals and phytonutrients and contain 90 per cent polyunsaturated healthy fat that helps maintain a consistent weight. Soaking nuts and seeds just overnight can also make them much more digestible and their nutrient load more available. Peanuts are not a tree nut, but are a legume that I avoid, so stick with tree nuts like those listed above for a powerhouse of nutrients.

Coconut oil

Coconut oil is one of the most versatile and beneficial sources of fats you can offer. My own avian veterinarian and international veterinary consultant, Karen Becker DVM, NMD, has been a very vocal proponent of the use of coconut oil for not only birds, but also for reptiles, dogs, cats and small mammals. Coconut oil is the richest known source of medium chain triglycerides (MCTs) which the body uses as an efficient source of energy without the need for insulin production. It is highly digestible and, therefore, great for gastrointestinal issues and can be heated without risk. This oil is an excellent source of lauric acid which has antibacterial, antiviral, and antifungal properties.


Coconut oil has been known to reduce the risk of cancer and other degenerative conditions like arthritis. Even though it is a saturated fat, it supplies fewer calories than other fats and it actually improves cholesterol levels and helps fight heart disease. Many have used it, including myself, for weight loss as it helps balance the body's metabolism and hormones.



nutrient from becoming excessive. It is common knowledge that fresh foods are beneficial and this is where the benefits of carbohydrates come into play.

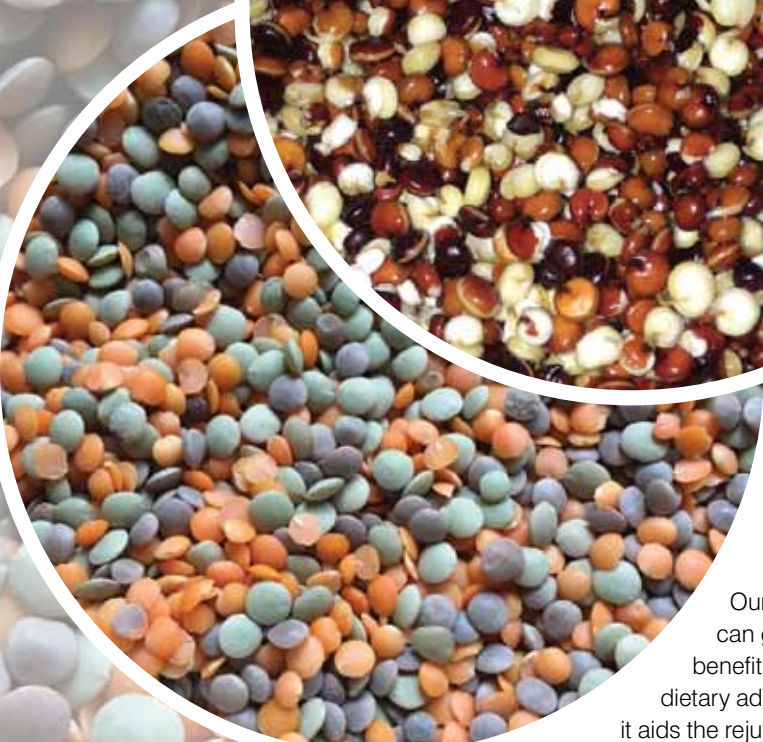
The Power of Proteins

Proteins are responsible for a great deal of the body's structural supports and chemical reactions that are involved in the organism's metabolism that allow the body to function optimally. Diversity is also key when it comes to proteins. Protein diversity and enrichment is critical to satisfying the amazingly varied nutritional requirements of our birds. Too much of any one thing is not recommended, no matter how healthy, so the exact same combination of dietary items every single day is not recommended. By always keeping the bird's physiology guessing with various food sources helps to avoid complacency and dependency on individual food items.



Enzymes are proteins that start and maintain the ongoing chemical reactions throughout the body. There are two main types of enzymes – metabolic and digestive. Metabolic enzymes are found in the blood, organs and tissues and catalyse reactions that produce energy. They are critical for detoxification and the maintenance of normal body functions. Digestive enzymes are mainly secreted by the pancreas and are mandatory for the breakdown of food. They also assist in the assimilation of nutrients, increasing their absorption. Enzymes include examples like amylase that break down carbohydrates, lipase that is responsible for metabolising fats, and protease that converts proteins into its building blocks, amino acids. We have all heard that birds should not have dairy in significant quantities, which is mainly because birds do not produce lactase, the enzyme responsible for breaking down the carbohydrate lactose found in milk. As birds never produce milk for their young, they never produce the lactase enzyme.

Raw, whole foods are generally rich with these all important enzymes. All raw foods contain enzymes but processing that includes heating destroys these enzymes as they typically denature above 110 degrees Fahrenheit. Sprouts are one of the richest sources of enzymes and some favourites that contain a high level of these enzymes are garbanzo, alfalfa, millet, sesame, sunflower, quinoa, and wheat. There is a great deal of information regarding the art of sprouting, and that itself could be its own article, but feeding seeds, nuts and grains after soaking, even just overnight, can help to provide a powerhouse of enzymes in the diet.



Our birds can greatly benefit from this dietary addition, as it aids the rejuvenation of the skin and feathers. It

supports a healthy bone density, something particularly important for animals like birds that already have hollow bones and can lose significant levels of calcium during egg laying. It has also been known to reduce allergic reactions, including those pesky seasonal allergies. Using coconut oil can be quite easy as it melts into a clear liquid just above room temperature. We have offered it in its whole form to birds who relish the taste and have mixed it with food where it provides a layering of nutrients on already healthy foods.

Energize with Carbohydrates

Carbohydrates are another nutrient source that can be vital for energy, as they are broken down into simple sugars that the body's cells use as an energy source. Carbohydrates that are insoluble and typically indigestible are known as fibre as they are rich in cellulose. This helps prime the digestive system and can be obtained through many different plant sources. Grains like wheat and rice are a source of carbohydrates and legumes, fresh fruits and vegetables also provide all of these natural sugars from which birds can benefit. There are two main things I always keep in mind when I consider carbohydrates – processing and diversity. I use no processed sugars and the only carbohydrates that we offer birds in any setting are those that are consumed in their raw, whole form. Diversity in the diet also helps to keep the concentration of any one

Teas: A Drinkable Whole Food

When considering nutrition, we have to change our mindset a bit as it should not just be about eating, birds consume nutrients when they drink in the wild as well. Birds in the wild consume water from sources like puddles and raincatches in the canopy that contain plant

components such as leaves, sticks, bark, and seeds that leech compounds into the water. We may be missing an opportunity for nutritional enrichment and teas may be the key. Brewing releases beneficial compounds that may not otherwise be readily available to our birds. Flowers like calendula, chamomile, red clover, roses, hibiscus, lavender, and jasmine have countless health benefits that are not only beneficial, but also enriching.

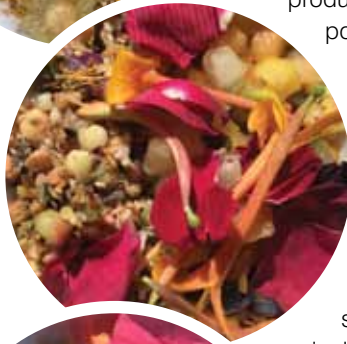
Tea leaves from the Camellia plant, commonly known as black, green or white teas, also have a myriad of beneficial compounds for our birds though any teas from this plant should be decaffeinated and organic. Even some seeds can be brewed like coriander, fennel, milk thistle, and star anise, as they all release beneficial proteins, fats and carbohydrates into the water. When brewing tea for our birds, we always use warm or hot, not boiling, water and let the tea cool completely before offering. We prefer loose leaf teas, not pre-bagged, as there may be chemicals in the teabags themselves that we prefer not to offer our birds. If your bird is suspicious, steep tea for a shorter period of time, making the tea more dilute. You can also soak certain foods in teas for added benefit. Many herbal teas may be fed dry or mixed with dry and fresh food mixtures, but we do recommend steeping for the full benefits. We do, however, throw handfuls of tea blends into our daily mash (soaked seeds and nuts, sprouts, diced vegetables) to add additional variety in color, texture and taste.

What do I do now?

What you need is whole, raw food that is fresh and clean. My philosophy has always been that avian diets should be predominately unadulterated, unprocessed food that includes a great variety of items on any given day. What you don't need is anything with added salt,

fat and sugar, fried foods, dairy products, or foods with additives and preservatives. Pesticides, herbicides, and fungicides should be avoided at all costs as the long-term effects are either unknown or have been known to wreak havoc on animal physiology. Things to add to your bird's diet should include organic foods including sprouts and other fresh foods, teas, nuts, and healthy oils. Any time a food is heated, it alters the nutrients and leads to an increase in carcinogens like advanced glycation end products (AGEs) and acrylamide. These potentially harmful compounds are not tested for in commercially processed foods and are found in a great many processed foods.

Stress is a part of any organism's life and it helps the individual cope and respond appropriately to the constant stimuli that surrounds it. The more stressed a bird's environment, which includes inappropriate foods, exposure to chemicals in the home and water, lack of exercise, and emotional stress, the more they require certain vitamins and minerals to cope with these stressors. The best source of these vitamins and minerals is raw, whole foods. Nutritional variety is critical for good avian health and supplying correct nutrition prior to disease ensures the strongest vitality. Though this article is far from being a complete resource, its purpose is to spark some ideas as to how to reassess how we feed our birds. Our continuous focus should be on moving our birds from surviving to thriving, so keep offering whole, living foods and your birds will live wonderfully vibrant lives. ■



ABOUT THE AUTHOR

Dr Crean is a biology instructor at the high school and university level. He also is an avid aviculturist, specialising in the propagation of green aracarís and white-backed mousebirds, President of The Avicultural Society of Chicagoland, First Vice-President of the American Federation of Aviculture and operates the Avian Raw Whole Food Nutrition group on Facebook. He often speaks to avicultural groups and acts as consultant to zoos and other institutions regarding animal husbandry and education programming. He has been awarded the Presidential Award for Excellence in Science Teaching by President Obama in 2009, the 2010 High School Science Teacher of the Year by the American Association for the Advancement of Science, as well as awards from the National Science Teachers Association, National Association of Biology Teachers, Illinois Science Teachers Association, among others. He has authored several curricula, including the award-winning "Zoo Genetics Plus" curriculum which is available free of charge at (www.xy-zoo.com).