

# VITAMIN A DEFICIENCY

**By Joanie Doss**

Hypovitaminosis A Vitamin A deficiency is a very common problem in pet birds. When caught in its early stages, it is easily reversible with little harm done. If it is not corrected, it can have serious consequences. Hypovitaminosis A is often seen in birds that are on an all seed or mostly seed diet. Not only is an all seed diet low in Vitamin A, but also does not provide the bird with other needed minerals and vitamins as well.

With the advent of pelleted or formulated diets, a more balanced diet is obtainable for pet birds. These diets general have an adequate amount of Vitamin A when they leave the manufacturing plant. However time and temperature are enemies of Vitamin A. There can be quite a bit of time from the day it was manufactured to the time you take it home and finally feed it to your bird. There is the amount of time tied up in shipping, warehousing, redistribution, and then storage again.

Time ticks by as it waits on the shelf to be sold. In the summer, this can cause a big drop-off in the nutritional content of the food. If you also store the food at home before using it, the effective level of carotenoids can go down even further.

Even if the food is fresh and loaded with carotenoids, it still may not raise the level of Vitamin A inside the bird.

Anything that causes a gut upset in the bird can interfere with digestion of carotenoids. Giardia and Cocida (Psittacosis) are two notorious problems that contribute to Hypovitaminosis A. If the liver is not functioning properly due to infection, a toxin, or being overweight, it won't be able to make the conversion to Vitamin A.

Plants do not contain active Vitamin A, but instead contain carotenoid plant pigments. Once a Vitamin A food source is eaten, the crop and proventriculus process it before passing it into the intestines. Once inside the intestines, the carotenoid pigments are absorbed through the intestinal wall and converted to retinol, or Vitamin A. Retinol is then transported by the lymph system and the blood to the liver. If there is any extra retinol, it is stored in the fat held by the liver.

Birds with a protein-deficient diet will not digest and absorb Vitamin A properly. Protein is necessary for a healthy intestinal wall. This protein is important since the intestinal lining has rapid cell replacement. These cells are fundamentally protein.

It takes more than just feeding birds food known for their carotenes. To be able to use these carotenes and convert them to Vitamin A, a bird must have the other nutrients needed for this conversion. The sinuses become more vulnerable to bacterial infections when a bird suffers from a Vitamin A deficiency. Sneezing, wheezing, nasal discharge and crusted or plugged nostrils are not only an early symptom of this, but can be symptoms for many other health problems as well.

Vitamin A is essential for vision. One of the earliest signs of this deficiency is night blindness. This is caused by a degeneration of the rods of the retina. The eyes may become swollen and weepy. Inflammation and abscess material may accumulate around the eye. Sometimes it is necessary to surgically remove the abscess material. The tear glands can be affected as well.

Vitamin A is known for its role in protecting the body against infections. There are little hair-like structures that help to keep the mucous flowing around cells. When there is a Vitamin A deficiency, these structures dry up and infections can occur because the cells are not bathed or cleansed. A bird may become thin due to lack of eating. He may play with his food rather than eat it. Sometimes a bird will experience gagging. His breath may become foul smelling and his breath slimy. If you open his mouth you will notice white patches. Although these are caused by a yeast-like organism, *Candida albicans*, the trigger is more than likely a deficiency of Vitamin A. These slimy cheesy yellow or white patches of *Candida* growth can also appear in the throat. This plaque becomes infected, forming an abscess. These abscesses can lead to nasal discharge and swollen eyes. When very severe, these abscesses can lead to suffocation.

The choana (slit in the roof of the mouth) may be swollen, and the papillae may be fewer or completely absent. When the salivary gland is affected, there is a swelling under the jaw. This has been noted in Amazons, African greys and Cockatoos. 50% of the Amazon parrots examined during necropsy at the veterinary school at The University of California Davis showed evidence of a Vitamin A deficiency in their salivary glands.

A bird may increase the amount of water that he would normally drink. This leads to increased urination. If damaged cells block the tubes that drain urine, the kidneys can start to fail. When the waste backs up, it will cause toxicity.

Bones need Vitamin A to develop properly. Without a sufficient amount they become weak or bent.

Feet can show that the bird is suffering from a Vitamin A deficiency. The scales may appear thickened and be abnormally shaped. The undersides of the foot appear smooth and worn. Corns appear on the pads. This may lead to a serious foot infection called bumble foot. Bumble foot is caused by a bacterial infection on the underside of the toes and on the ball of the foot. The infection can spread from the foot and travel through the blood to the kidneys. This can damage the kidneys as well as other organs. This infection is easier to prevent than cure, so it is better to catch it before it gets out of hand.

Another area affected is that of reproduction. The eggs produced by the hen can show many signs. Eggs may have pitted or very soft shells. Blood vessels grow improperly in embryos. The chicks either die in the shell or are very weak at hatching. There can be a decrease in egg production and in the hatch-ability. There are increased blood spots in the eggs of unsuccessful clutches. Fertility in males may be impaired because of decreased sperm counts. There can be high levels of abnormal sperm, or sperm with decreased ability to swim and move properly.

Feather color and condition are dependent on the bird's diet. Vitamin A is needed for the formation of the orange and red pigment in the feathers. Black, chewed feathers often point to a diet low in Vitamin A. Spirulina is often fed birds to maintain proper feather coloration.

Always consult your vet before supplementing your bird with Vitamin A. It is a fat-soluble vitamin and is toxic when too much has been given. A bird's body stores the Vitamin A so you can easily overdose. Foods with beta-carotenes will not cause an overdose of Vitamin A as they are not converted into Vitamin A until it is needed. Feeding foods known for the high amount of carotene may not be the answer even though you will not overdose the bird through food. Unless other nutrients are also in his diet, he will not be able to convert the carotene to Vitamin A.

High amounts of Vitamin A can result in temporary yellow or orange coloration's of the skin and fat. Tetracycline treatment has been shown in some animals to produce toxicity at lower doses of Vitamin A. A compromised liver can also lead to Vitamin A toxicity at low levels. You must be very careful when giving Vitamin A supplements to birds on a pelleted diet, as most of them already contain the required amount. Adding Vitamin A supplements to them can overdose the bird. The practice of adding cod liver oil is equally risky. It can easily become rancid, so must be stored properly. The Vitamins A and D found in cod liver oil are both fat soluble and therefore can be stored in the body. This increases the chances of giving the bird too much.

Birds generally die from secondary infections caused by the weakened resistance from the Vitamin A deficiency more than from the deficiency itself. The secondary infections cause the organ damage that leads to the bird's eventual death.

When you bring your bird to your veterinarian for a Vitamin A deficiency, the vet will give the bird a thorough physical exam. Then through blood tests, cytology of lesions, and gram stains she will decide how the bird should be treated. If there is a secondary infection, that will be treated. She may initially give an injection of Vitamin A and give you a diet for your bird to prevent it from coming back.

Since Vitamin A symptoms have some of the same as avian tuberculosis, bacterial infections, tumors, etc., it is best to have a person that can determine the true cause of the bird's problem. It is unwise to self diagnose your bird. You may treat the bird as having a Vitamin A deficiency when it could be something else.

#### Signs of Illness

- a.. inactivity
- b.. eyes closed most of the time
- c.. feathers fluffed all of the time
- d.. "droopy" wings
- e.. low, almost horizontal, posture on the perch
- f.. talking and vocalization stops
- g.. eating stops

- h.. noisy breathing
- i.. frequent sneezing
- j.. discharge from nose
- k.. tail bobbing with each breath
- l.. perching with neck extended and beak grasping wire of cage (bird does this to keep breathing passages straight to make breathing more effortless)
- m.. vomiting
- n.. soiled or pasted vent
- o.. feathers lost and not replaced
- p.. bleeding
- q.. weigh loss
- r.. swelling
- s.. changes in water consumption
- t.. changes in routine and habits
- u.. change in droppings
- v.. change in activity level
- w.. decrease in preening activity
- x.. frequent flicking of the head
- y.. remaining at bottom of cage
- z.. self mutilation
- aa.. regression
- ab.. dehydration (weakness, sunken eyes, feet cool, ridging of skin over sides of toes)

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