Lecture title: **Pet Bird feed**

Lecturer Affiliation:

Summary:

Pet Bird feed

Birds are Unique Pets

Birds have enriched the lives of many of us. They are spectacularly beautiful possess the unique ability for flight. They are long-lived, and many of the parrots mimic human speech.

To keep your friend healthy and fit, you must do your homework. You should bec familiar with the natural background of your pet. You should learn as much as you about where the species lives in the wild

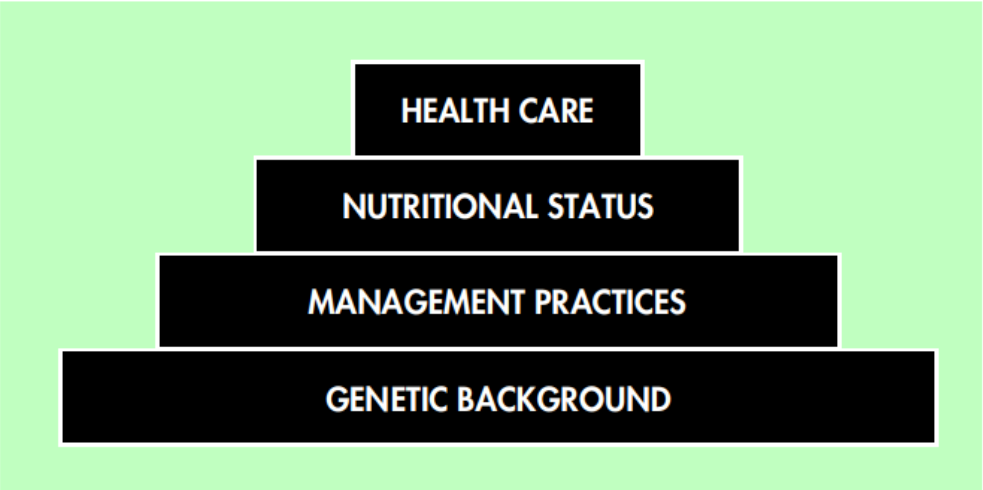

FIG 3.1 Factors contributing to bird health.

Pet bird feed

In general, for parrots we recommend a diet consisting of at least 60-70% pellets. S and nuts such as sunflower seeds, peanuts, millet, and safflower should compris more than 10-20% of the total diet offered, or be an occasional treat. The remaining of the diet should consist of green, leafy vegetables such as kale, broccoli, spinac red/ orange vegetables such as carrots and sweet potatoes. Healthy, whole grain fo

such as cereals (Cheerios, Grape Nuts) and whole grain breads and crackers are also excellent dietary choices. Fruits (grapes, apples) can be a small part of the diet.

Parakeets and cockatiels are grassland foragers. Their natural diet consists of more seed matter than a parrot. For this reason, parakeets and cockatiels prefer hard, crunchy foods over moist foods. It is frequently difficult to get them to eat vegetables, but it's definitely worth trying. An acceptable diet for these guys includes a quality seed mix and free access to hearty grains such as low fat, low sugar cereals (mentioned above), crackers, and breads. Pellets are also an excellent source of nutrition for parakeets and cockatiels. Never feed avocados, as they are poisonous to birds. Avoid alcohol, caffeine, and chocolate. Avoid salty and greasy foods as well. Be aware that an abrupt diet change can be very dangerous to a bird, especially if ill. During a dietary change, you may be asked to return to the hospital every 2-3 days to check your bird's body weight.

Fig. 1.2 Indian ring-necked parrot (*Courtesy* Sudhir Kumar, India)

Vegetables, Grains, and Fruits

In general, vegetables contain more nutrients than fruits. The dark green leafy vegetables (kale, spinach, collards, broccoli) and red-orange vegetables (sweet potatoes, carrots) are very high in beta carotene (the precursor to vitamin A). Many green leafy vegetables are a rich source of calcium. Whole grains are anexcellent dietary choice as well. Commercial cereals are usually vitamin and mineral fortified.

Fig. 1.1 Indian parrot (*Courtesy* Sudhir Kumar, India)

Seeds and Nuts

A vitamin-fortified seed mix was the best diet for a pet bird. Now we know better. Most birds eat more than just seeds in the wild. Oil seeds such as sunflower and safflower are very high in fat (40-60% fat) and virtually devoid of vitamin A, calcium, and certain essential amino acids. Spraying a vitamin/mineral spray over the seeds (the standard for seed companies) doesn't help, as birds crack the shell and eat the meat, letting the vitamin-rich shell fall to the ground. Seed-exclusive diets can lead to obesity in certain species (such as budgies, Amazon parrots, and rose-breasted cockatoos), vitamin A deficiency (especially obvious in Amazon parrots and eclectus parrots), and calcium deficiency (especially in egg laying birds).

Pellets (Formulated Diets)

Pelleted diets are commercially formulated products that are designed based on what is known from studies mostly on poultry nutrition.

While these products contain a known quantity of nutrients, vitamins, and minerals, no company can guarantee that it provides the perfect nutrition for every bird. Pellets should be part of a varied, complete diet. Most pellets are similar in composition. Some people prefer Harrison's diet because it is certified organic. Pellets come in a variety of shapes, colors, and flavors. The flavoring agent is typically sprayed onto the pellet. Different colored pellets taste the same, although birds may show a preference for certain colors. Bird have a very poorly developed sense of smell. Pellets are relatively low in fat (6-10% fat) and are less tasty than seeds for this reason.

Water, the Essential Nutrient

- Water is essential to the body for cooling and for the maintenance of intracellular and extracellular fluids. It is the medium in which digestion and absorption take place, nutrients are transported to cells and metabolic waste products are removed.
- Water and "soft foods" (foods containing high moisture content over 20%) are frequently implicated in exposures to high concentrations of bacteria. An open water container that becomes contaminated with fecal material or food will promote rapid bacterial proliferation.
- Contamination in the water container, in addition to the aqueous medium and compatible environmental temperatures, provide all the requirements for microorganisms to thrive
- Water intake will be greatly influenced by the type of diet provided. Most birds can derive the majority of their water requirement from foodstuffs when the diet consists primarily of fruits, vegetables or moist foods. Processed diets tend to increase the bird's water intake over that typical for a seed diet because they generally are dry, lower in fat and tend to have overall higher nutrient levels. Slightly moister feces are often observed in birds on a formulated diet.
- Water should be provided in a bowl or in a bottle and changed daily. You can use city tap water if it's clean and healthy. Filtered tap water is acceptable as long as the filters are changed regularly. Bottled water can also be used.

The Effective Energy Content of Food

It is important that the individual nutrient levels be balanced with respect to the energy content of the food, because the food intake by the animal is largely dependent on the total caloric density of that food.

Energy

- The total amount of energy, or the gross energy contained within the feed, is broken into several fragments as it is metabolized in the body. During the process of digestion, potential energy sources are lost through the feces, urine and urates. What remains is the metabolizable energy (ME)
- The bird derives energy from proteins, fats and carbohydrates in the diet. Of these, protein is the least efficient source of energy, because the body must deaminate the amino acid, excrete the nitrogen as uric acid and then use the remaining carbon skeleton for glucose or fat synthesis. The average gross energy of protein is 5.65 kilocalories/gram. After the losses through deamination and subsequent metabolic reactions, protein yields a net of 4.1 kcal/g.
- Carbohydrates are the most important energy source for the body because they are the only energy form that the brain can use. Of the carbohydrate family, energy is derived from starches (digestible polysaccharides), disaccharides (sucrose, maltose) and the simple sugars or monosaccharides (glucose, fructose, mannose, galactose)
- In the case of very low caloric density foods, the gastrointestinal tract capacity can become a limiting factor for adequate caloric intake. Conversely, suppose the dietary caloric density is extremely high. In that case, the appropriate feedback systems that regulate satiety may not have time to respond before the caloric needs are exceeded, resulting in overconsumption.
- Energy content of the diet, or specifically fat content, also has an influence on the rate of food passage through the system. As the fat content of a diet increases, the rate of passage is slowed , lso improves digestibility of most nutrients in the food by increasing the length of exposure to digestive enzymes and the time for absorption

Essential Fatty Acids

- The predominant fatty acid compounds in bird tissues are oleic acid, palmitic acid and linoleic acid. Body fat composition will be somewhat influenced by dietary

fatty acid content because of the absorption and subsequent deposition of some intact fatty acids. Common vegetable oils are generally high in linoleic acid (eg, corn oil, soybean oil, peanut oil = 50%; sunflower oil = 60%; safflower oil = 75%). Tropical oils, such as coconut oil, contain substantial amounts of medium chain fatty acids, and are therefore poorer sources of linoleic acid

- the ratio of unsaturated to saturated fatty acids in the diet, other dietary constituents and the intestinal microflora. Generally, oleic and linoleic acids are the most efficiently absorbed by the bird, Based on the general requirements for most other species, it can be safely predicted that the linoleic acid requirement for companion and aviary birds is 1.0 to 1.5% of the diet.

Vitamins and Supplements

Parrots and parakeets do not require supplemental grit. Over their lives, they retain several small mineral pieces in their stomach that assist digestion. Some ill birds will overconsume grit and become impacted.

- Adding vitamins to the water or food is guesswork. Many vitamins break down quickly on exposure to light. Food and water additives may change the appearance and taste, making them less palatable. Birds may refuse to drink supplemented water and become dehydrated. Supplements should never be trusted to make up for a nutrient-poor, seedbased diet.
- there are many cases of interactions between vitamins and minerals, certainly the most significant metabolically is the relationship of calcium, phosphorus and vitamin D3. It is obligatory for adequate vitamin D3 to be available for the proper absorption of both of these minerals to take place. Inadequate vitamin D3 levels in the body can cause calcium deficiency symptoms in an otherwise calcium-adequate diet.
- The other critical vitamin/mineral interaction is that between vitamin E and selenium, in which their biologic functions are essentially the same, but occur in different parts of the cell (lipid-based and aqueous, respectively)

Amino Acid/Vitamin Interactions

- The most notable interrelationship between a vitamin and an amino acid is the relationship of niacin and tryptophan.
- In fact, a significant portion of the niacin requirement can be spared by an excess of tryptophan in the diet over what is required for necessary protein biosynthesis, The ultimate efficiency of this conversion is determined by the liver enzyme,

picolinic acid carboxylase, which catalyzes the breakdown of the immediate precursor of niacin.

- This enzyme activity is species-dependent, affecting the animal's potential use of tryptophan to satisfy the niacin requirement. Additionally, several of the reactions in the bioconversion require riboflavin and pyridoxinedependent enzyme systems. Protein, energy and hormonal status also play roles in this series of reactions.
- Choline is an example of a vitamin that can directly spare the requirement of an amino acid, namely methionine. This occurs through its ability to act as a methyl donor in a fashion similar to methionine, thereby limiting the specific role that methionine would serve if an otherwise insufficient level of methyl donors existed.

Converting to a Better Diet

Step 1: Place additional food cups in the cage containing pellets and grains. Leave them there around the clock.. Offer another bowl containing vegetables and fruits, but remove this bowl after a couple hours to prevent spoilage

Step 2: Watch your bird closely for signs they are eating the new foods. If your bird does not begin to eat the new food within two weeks, add a very small amount of the foods to the seed mix, but not enough to completely obscure the seeds.

Step 3: After two weeks, and after you've seen your birds eating the new foods, remove the seed cup.

Step 4: Offer the bowl with the seed mix twice daily, for 30-60 minutes in the morning, then again at night.

TABLE 3.3 Recommended Nutrient Allowances for Companion Bird Diets[7,29]

These allowances can be used as general dietary guidelines for most psittacines and the commonly kept passerines. Species differences do occur, but have not been listed due to insufficient research. The anticipated minimum requirement (as extrapolated from other species) is included for comparison. These values do not compensate for nutrient bioavailability, genetic variability and other conditions.

Nutrient	Anticipated Minimum Requirement	Recommended Allowance for Maintenance[1]
Protein, %	10.00	12.00*
Fat, %	–	4.00*
Energy, kcal/kg	–	3000.00
VITAMINS		
Vitamin A, IU/kg	2500.00	5000.00*
Vitamin D_3, IU/kg	500.00	1000.00*
Vitamin E, IU/kg	15.00	20.00*
Vitamin K, ppm	0.80	1.00
Thiamine, ppm	2.00	5.00
Riboflavin, ppm	4.00	10.00
Niacin, ppm	40.00	75.00
Pyridoxine, ppm	4.00	10.00
Pantothenic acid, ppm	12.00	15.00
Biotin, ppm	0.15	0.20
Folic acid, ppm	1.00	2.00
Vitamin B_{12}, ppb	5.00	10.00
Choline, ppm	750.00	1000.00*
Vitamin C	No requirements demonstrated*	
MINERALS		
Calcium, %	0.30	0.50*
Phosphorus (available), %	0.15	0.25*
Phosphorus (total) approx., %	0.30	0.40*
Sodium, %	0.10	0.15
Chlorine, %	0.10	0.15
Potassium, %	0.30	0.40
Magnesium, ppm	500.00	600.00
Manganese, ppm	60.00	75.00
Iron, ppm	60.00	80.00
Zinc, ppm	40.00	50.00
Copper, ppm	6.00	8.00
Iodine, ppm	0.30	0.30
Selenium, ppm	0.10	0.10
AMINO ACIDS		
Lysine, %	0.45	0.60
Methionine, %	0.20	0.25
Tryptophan, %	0.10	0.12
Arginine, %	0.50	0.60
Threonine, %	0.35	0.40
Other essential amino acids are sufficient in common diets.		

TABLE 3.4 Changes in Need for Nutrients During Periods of Debilitation

Vitamin C	The debilitated animal may not be able to adequately synthesize enough vitamin C, especially in the case of hepatic damage. Increased vitamin C in other species exposed to a number of different types of stresses has shown to improve production and health criteria.
Vitamin D	In diseases affecting the liver and kidneys, the enzymes required to produce the metabolically active form of vitamin D_3 will be impaired. In these situations, or in the case of a marginally deficient animal, it may be beneficial to provide vitamin D_3 therapy.
Vitamin K	For animals that have undergone extensive antibiotic therapy and are being maintained on an unsupplemented or marginally supplemented diet, it may be necessary to provide vitamin K because of its decreased synthesis by normal intestinal flora.
Vitamin B complex	In the case of an anorectic animal, it may be beneficial to supply additional B vitamins, especially thiamine. Other water-soluble vitamins such as riboflavin, pyridoxine and folic acid are particularly important in protein and energy metabolism; therefore, these vitamins have increased importance in the disease state.
Zinc	In a nutritionally compromised animal, zinc will improve healing and is an important component in protein synthesis; therefore, zinc is necessary for the maintenance of the immune system and phagocytic activity.