Nutrition for Small Mammals

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Revised: May 17, 2018
Published: November 24, 2009

A variety of small mammals such as hamsters, gerbils, guinea pigs, mice, rats, rabbits, chinchillas and ferrets are commonly kept as household pets for adults and children alike. These pets have been bred in captivity for years and are ideal for a variety of pet owners because of their small space requirements, quiet nature, ease of handling and relatively simple husbandry requirements. Diet is an important part of the care of these pets and each species should have its own specific nutritional needs met. A rabbit is not a rodent is not a ferret, and so on.

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Water

Clean water must be accessible to any animal at all times. Some species, such as chinchillas and gerbils, require less water due to physiological adaptations to living in a dry environment, but they still need a water source always available. A sipper water bottle is the best choice because it cannot be contaminated with bedding, food, feces and urine. The sipper part of the bottle should be metal and not plastic, which can easily be damaged by inquisitive teeth. Animals unfamiliar with a sipper bottle may have to be trained to use it. It is not necessary to add vitamins to the water for any of these species if the recommended diets are followed. The disadvantages of adding vitamins include making the water taste disagreeable and promoting bacterial growth. In addition, many vitamins are inactivated shortly after they are exposed to air, water and light, which reduces their effectiveness. Although it is a rare problem, it is possible to overdose a pet on vitamins, which can result in disease. Medications should be added to the water only under the advice of your veterinarian.

Water bottles or bowls should be emptied and filled with fresh water daily to encourage drinking (some animals don't like stale water) and to prevent overgrowth of bacteria.

Food As An Environmental Enrichment

Remember that giving food to your pet is not just a matter of making sure it gets its nutrients. Food is also something that is mentally stimulating and interesting for your pet. Most animals in the wild spend a good portion of their day looking for food. When we give them all the food they want all the time in one place in their cage it can be pretty boring! We are essentially taking away the "work" they do and it is no wonder animals can become lethargic and overweight. Once your pet is comfortable in your home and is eating well, try making some changes in how and where you feed. Try stuffing pellets or healthy treat foods in toys like

small boxes or toilet paper rolls or plain white paper twisted closed at each end. Try hiding the food around the cage or exercise area so they have to forage for it. Be inventive and have some fun. Treat foods, as listed for each species, are great to use for training your pet for a variety of simple behaviors that make life interesting for both of you!

As a general rule, any changes in your pet's diet should be made slowly over a period of time to avoid intestinal upsets. If your pet is not in the best of health, or if you are in doubt about changes that should or should not be made as suggested by this article, please consult your veterinarian before proceeding. The dietary recommendations in this article are for NON-BREEDING, NON-PRODUCTION PETS. If you are involved in a breeding or a production program, you may need to make adjustments in the amount and types of foods fed.

Rabbits

The biggest mistake people make when feeding rabbits is overfeeding high calorie and high starch foods such as commercial pellets and grains and underfeeding high fiber foods such as hay and greens. This pattern of feeding can lead to obesity and gastrointestinal disease. The most important part of the house rabbit diet is an unlimited supply of grass hay, which provides essential fiber as well as proteins, vitamins, minerals and carbohydrates. Because of the high fiber content of the hay, it is the best preventative for stomach and intestinal problems such as chronic soft stools. Hay (and greens) also provide some of the essential work needed to keep the teeth worn down due to all the chewing the rabbit needs to do to break it down. Hay should be provided for your pet in a box or hay rack and should always be available. Hay can also be stuffed in empty paper towel or toilet paper rolls, unpainted, unvarnished baskets, empty boxes and so on to provide a sense of foraging for food, which is a mental enrichment. Grass hay is preferred over alfalfa hay because grass hay is lower in calories and calcium. There are several types of grass hays available such as mixed orchard grass, timothy, Bermuda or oat. Hays vary depending on the area of the country and the time of the year. Sources of hay include pet stores, feed stores and online companies. Hay should be stored in a cool, dry area in an open bag to allow for good air circulation. Hay should have a fresh smell. Damp hay can become moldy and should be discarded. Rabbits of any age can be introduced to hay without any special preparation. Rabbits are perhaps the third most commonly kept mammal after dogs and cats in the United States. They are not rodents, but are included in a family called Lagomorpha. They are strict herbivores and have continually growing incisors and molars that are designed to tear and macerate tough leafy foods. The jaw moves from side to side when the rabbit is eating and the teeth are worn down by this action. Rabbits require a large percentage of fiber in their diet to maintain normal gastrointestinal motility. Rabbits have a large cecum, which is a blind pouch located at the junction of the small intestine and the large intestine, where the digestible portions of the intestinal contents enter and are broken down by bacteria. Some nutrients are absorbed through the wall of the cecum, but most nutrients are locked up in the bacteria. The rabbit then produces bacteria-rich droppings called cecotropes, which are softer, stickier, greener and have a stronger odor than the regular waste droppings. These cecotropes are eaten directly from the anus as soon as they are produced. The cecotropes are then passed through the digestive tract of the rabbit and nutrients such as vitamins, amino acids and fatty acids are released from the bacteria and absorbed into the rabbit's body. In this way, rabbits are efficient at producing their own vitamin, protein and fat supply from food that for some animals, such as ourselves, would be totally useless.

Another important part of the house rabbit diet is fresh, leafy greens. These foods provide not only fiber, but a variety of vitamins, such as A and C, minerals, proteins, and carbohydrates. Most rabbits really enjoy their greens. The old stories about greens causing 'diarrhea' are usually referring to rabbits that have been on a low-fiber or high-calorie diet, such as a commercial pellet or a high-grain diet, that are suddenly introduced to greens. On commercial

pellets or grains, the flora in the gastrointestinal (GI) tract may not be as varied as in a hay and greens based diet. Additionally, the GI tract may become a bit sluggish due to the high calorie content and lower fiber content. When greens are introduced to these rabbits, more water is introduced into the GI tract than the rabbit got on the dry commercial diet. In addition, the GI flora has to shift to accommodate the new food and the GI tract 'speeds up' to a more normal rate. All this can result in temporary soft stools, which usually stabilizes within a week. However there is no reason for your rabbit to have to experience this if you follow this rule. For rabbits that have never been on anything but pellets, first introduce hay and once your rabbit is eating hay well for at least four weeks, then introduce greens.

When first introducing greens for any rabbit, do so one type at a time every three days to make sure your rabbit is handling things well. Keep track of the foods you have fed and once they have been successfully introduced you can feed any selection you like each day. Once your rabbit has been introduced to greens, feed at least three different types of greens daily so that you provide a variety of nutrients. Greens should be washed thoroughly, to remove dangerous pesticides. Uneaten fresh foods should be removed from the cage after 3 to 4 hours to prevent spoilage. The amount to feed is a maximum of 1 packed cup of greens for each 2 lbs of body weight daily You can feed this all at once or divide it between two or more feedings a day. Some examples of nutritious greens are: dandelion greens (and flowers), raspberry leaves, kale, mustard greens, escarole, endive, radicchio, collard greens, beet greens, carrot tops, parsley, turnip tops, romaine, Swiss chard, bok choy, mint leaves, cabbage (red and green), etc. Use dark, tough, leafy greens as opposed to light colored thin-leafed greens such as bibb lettuce and iceberg lettuce.

Commercial rabbit pellets were originally designed to promote rapid growth, weight gain, and ease of feeding for production rabbits (meat and fur) and laboratory rabbits. They are efficient at what they are designed to do, but for the house rabbit that is to live out a full life, the unlimited feeding of a commercial pellet may be a problem. Once rabbits are full grown, they don't need to put on more weight. Feed your juvenile pet a commercial pellet that is designed for the maintenance of the adult rabbit, with a fiber content of 18% or higher, a protein content at around 13-14% and fat content at no more than 3%. Once a young bunny has reached its adult size (4-8 months depending on the breed) we recommend cutting back the pellets to 1/4 cup per day as a MAXIMUM. Remember, there is always hay available so your pet will never go hungry. Pellets should be bought in amounts that will be used within 3 months and kept in a closed container in a cool dry place to prevent spoilage. Do not use pellet mixes that contain grains and seeds along with the pellets. The addition of the grains and seeds only add to the calorie and fat content, which can result in obesity, liver and intestinal disease. Some obese rabbits that have difficulty losing weight on pellets may have to have them removed from the diet altogether, but this should be done only under your veterinarian's supervision.

Additional supplements are not needed for rabbits on a diet that is rich in hay, greens and limited pellets.

Guinea Pigs

Guinea pigs have a special requirement that rabbits and other rodents do not. Guinea pigs, along with humans and primates, require an outside source of vitamin C. Other animals produce their own vitamin C within their bodies. Commercial foods made specifically for guinea pigs should have vitamin C already added. The problem is that vitamin C is water soluble and not stable when exposed to sunlight or high temperatures or when stored for a long time. Sometimes the pellets you buy may not have been stored properly or are too old and you may think your pet is getting enough C when that’s not the case! The good news is that there are other ways to give vitamin C. One is through good quality grass hay, as

mentioned. The other is by feeding dark, leafy greens that are richer in vitamin C then an orange! For instance a cup of fresh kale contains approximately 250 mg of vitamin C compared to a cup of oranges (without the peel), which contains only 50 mg of C. The minimum daily vitamin C requirement in the guinea pig is around 25 mg per day. Guinea pigs can easily get this amount and more with the feeding of 1/2 to 1 cup of fresh leafy greens daily. (Use the same greens as listed for rabbits above.) Some particularly high vitamin C foods are kale, dandelion greens, parsley, collard greens, green peppers and mustard greens. Supplementing vitamin C in the water is not effective due the rapid breakdown of the vitamin when it is exposed to light and heat; also, some vitamin C products have a bitter taste and this is not recommended. There are also vitamin C chewable tablets that can be given if your pet will not eat any of the green foods mentioned. Please consult your veterinarian if you choose to give vitamin C in a tablet or liquid form to make sure that you are not overdosing your pet. Guinea pigs, rats, mice, hamsters, gerbils, and chinchillas are all rodents, but they have some distinct differences in their dietary requirements due to the diverse habitats where they originate. Guinea pigs are herbivores and require a similar diet as rabbits with plenty of grass hay and greens and limited commercial pellets. They have continuously growing incisors and molars, which like the rabbit wear down with the normal action of eating. Guinea pigs also produce nutrient-rich cecotropes in a similar manner as rabbits, which they eat directly from the anal area. Guinea pigs should have unlimited grass hay, which is rich in nutrients, not too high in calories, promotes healthy intestinal tract movement and flora and is helpful for proper tooth wear.

Healthy treat foods for guinea pigs are the same as listed for rabbits above. Feed a maximum of 1 level tablespoon of combined treats per day. These can be great to use for training as well.

As with rabbits, commercial pellets were designed for rapid growth and ease of feeding, however unlimited feeding of commercial pellets can lead to obesity. Therefore, limit pellets to 1/8 cup pellets per 2 lb guinea pig daily. As mentioned above, even though guinea pig pellets have vitamin C added, you should not depend on them to provide the full daily amount. Guinea pig pellets must be used within 90 days of the day they were produced to guarantee sufficient amounts of vitamin C. In many situations, bags of pellets have been sitting on the shelf for longer than 3 months and the vitamin C content is drastically reduced due to breakdown by contact with air, moisture and high environmental temperatures. Scurvy, a disease caused by vitamin C deficiency, is still one of the most common diseases seen in the pet guinea pig who is fed a strictly commercial pelleted diet. Rabbit pellets should not be substituted for guinea pig pellets because they may contain excessive levels of vitamin D, which can be toxic to guinea pigs. Do not feed cereal grains or sugary foods to guinea pigs for the same reasons as in the rabbit.

Guinea pigs are notorious for playing with their water bottles and spilling a great deal of water into the cage. The bottle may have to be refilled frequently and the bedding underneath it changed daily to prevent mold from growing.

Chinchillas

Chinchillas also can get the same treat foods as rabbits at a maximum of 1 tablespoon a day. Unlike rabbits, however, you can give your chinchilla a small amount of raw or roasted UNSALTED nuts daily such as pumpkin seeds, sunflower or safflower seeds, flax seeds, millet, almonds, pecans and walnuts. Chinchillas rarely have a problem with obesity and these 'treat' foods appear to be greatly relished. Commercial chinchilla pellets can be fed in the amount of 1/8 cup daily for an adult chinchilla. The pellets should contain approximately 16 to 20% protein, 18% fiber, and about 2 to 5% fat. Because chinchillas come from a dry environment they do not drink much water but it should still always be provided. A sipper

bottle is preferred. Chinchillas have a diet similar to rabbits. They are herbivores with continually growing teeth as in the rabbit and guinea pig. They originally came from a dry, cold mountainous area where their diet consisted primarily of tough dry grasses. Chinchillas should be provided with unlimited grass hay as described for the rabbit because the fiber is critically important to proper digestion and the tough hay strands may be helpful in keeping the teeth worn properly. They can also be offered greens as described for the rabbit, but they don't need as much since their natural diet is much more dry then a rabbit's diet. Feeding about ¼ cup per day of any of the greens listed for rabbits is usually sufficient.

Rats, Mice, Hamsters, And Gerbils

Rats, mice, hamsters and gerbils have similar dietary requirements. They are all primarily seed eaters but rats, mice and particularly hamsters are also known to eat some insects and other small animals either fresh or as carrion. All of these species have long, continually growing incisors, which are worn down by the action of eating and by chewing on hard surfaces such as wood in the process of creating nests and burrows. The basic diet for this group should consist of a good quality rodent chow or lab block. Rodent chows should have a minimum of 16% protein and 4 to 5% fat content. These dry foods can be left in the cage at all times in a bowl or hanging feeder to be consumed as needed. However as mentioned at the beginning of this article it may be more interesting for your pet to have the food put in the environment a couple of times a day; try putting it in different areas, or hiding it as described. Very young, recently weaned animals may have a problem gnawing on the hard pellets and it will be necessary to break them into smaller pieces or soften them for a few weeks until the pet is more mature. Pelleted food should be purchased in amounts that will be used within three months to prevent spoilage. Good quality rodent chows are considered to be fairly complete diets for this group.

Other foods can be fed in addition to the commercial pellets but should not constitute more than 20% of the total diet. Fruit and vegetables as described for the rabbits, guinea pigs and chinchillas can be offered at a rate of about 1 teaspoon/day. Remove any uneaten fresh foods within 3 to 4 hours to prevent spoilage. All of these species love grains, nuts and seeds, but these foods should be offered in small quantities because of their high fat content. A reasonable amount of nuts and or seeds would be a total of 1 teaspoon/day for rats and about ½ teaspoon for the other species. If these 'treat' foods are given free choice, the pet will eat them exclusively, not eat the balanced pellets and develop nutritional disease such as obesity.

Ferrets

Ferrets in recent years have been traditionally fed a dry commercial diet. There are now many diets on the market that state they are designed specifically for ferrets. The problem with all of these diets is that in order to make the dry shape of the food, it is necessary to use grains such as corn, rice, wheat or potato. Being strict carnivores, ferrets do not digest nor need these plant products in their diet. Grain-based diets may also predispose ferrets to urolithiasis. In addition, some researchers have discovered that feeding an all-dry diet is too hard for a ferret's small teeth and it may cause excessive wear to the teeth over time, leading to dental disease as the ferret ages. The most natural diet for a ferret would be one that is comprised of whole prey, such as humanely killed whole mice, small rats, chicks and so on. While whole-prey diet is somewhat popular in Europe, its use has never really caught on in North America. Therefore, if one is to depend primarily on commercial foods, then a variety of foods would be the best choice. Ferrets are strict carnivores and belong to the family Mustelidae. They have a short digestive tract and food passes from one end to the other in about three to four hours. Ferrets have a minimum protein requirement of 32%, which, when combined with the short amount of time that the food is in the intestinal tract, necessitates a

high quality dietary meat protein. Plant proteins are not digested and used by ferrets. In addition, they have a high fat requirement, around 20 to 30%. Ferrets use fat as their main energy source. They are poor digesters of fiber and they cannot utilize carbohydrates effectively for energy. It is also important to note that ferrets, like cats, will develop strong taste preferences by the time they are 4 months of age. This gives these animals the reputation for being “finicky” later in life, but it is really based on their natural biology. Therefore it is a good idea to expose young ferrets to a variety of tastes and textures that will expand the foods they will eat later as an adult.

Ferrets can be fed a either a high quality cat or ferret commercial diet that has a minimum of grain in it. There are several diets available for either ferrets or cats (also strict carnivores) that fit the bill. Look for a food that has at a minimum 32% and a maximum of 40% protein and at least 20% fat. Because these diets may be hard on the teeth over time, it may be preferable to sprinkle some water or chicken broth over the food to slightly soften it. It is not necessary to blenderize it or make it into a soup. Contrary to prior recommendations for feeding dry food to ferrets, it is not necessary to have food in the cage constantly. Ferrets are highly intelligent hunters and would have only eaten once or twice a day. Therefore, it is only necessary to put the food in twice a day for 30 to 60 minutes and then remove it. In this way they will gain some mental stimulation looking forward to mealtime. Try putting the food in different places and hiding it in their play area to give them a chance to “hunt” for it.

In addition to the commercial diet, you can feed about a tablespoon of a good quality all-meat canned cat food. Avoid foods that have vegetables or grains in them. This addition will be both mentally stimulating and will expand the variety of meat sources your pet will get. Many of the commercial diets are based on chicken, so try canned beef, venison, duck, turkey and other meats if possible.

Some ferrets enjoy bits of fruit and vegetables such as green peppers, bananas, cucumbers and melons. These are not foods a ferret would normally encounter in the wild but in small amounts they are not harmful. Feed no more than 1 level teaspoon per ferret per day of a fruit or vegetable. They cannot digest fiber well, and if these items are fed in excess, your pet may develop diarrhea. Foods to completely avoid include breads, breakfast cereals, cakes, cookies and dried fruits such as raisins. These foods contain too many sugars, which can be damaging to the ferret’s pancreas.

Unfortunately, ferrets love sweet foods and may beg for these treats, but you take a serious risk with your pet’s health in offering them. Many of the commercial treats sold for ferrets have sugar in them, so it is best to avoid them. Remember ferrets are carnivores so select their treats appropriately.

Fatty acid supplements may be beneficial to your ferret, particularly if the fat content of the food you are giving is under 20%. If the fat content is too low you may see the hair coat become dry and the skin flakey. Your ferret may be itchier as well. If needed, use a good quality supplement that includes Omega 3 and Omega 6 oils. Check with your veterinarian for a source. Use about ¼ teaspoon per ferret per day. Please note that if your ferret’s coat does not respond to the addition of the supplement within a couple of weeks or if there is hair loss or skin disease, please have your pet examined by a veterinarian. These signs are indications of disease that is not related to diet.

Conclusion

Feeding your pet will take some thought and preparation, but once a routine is established it should be easy to accomplish. Good nutrition is the basis for a strong body. Feeding your pet in a healthy manner will help to prevent many potential disease problems down the road.

Visit your veterinarian with your pet regularly not only for health checkups but to stay informed of current information in the ever-evolving field of small mammal husbandry and care.

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