

A GUIDE TO FEEDING YOUR PET RABBIT

There has been an increasing amount of research over the last few years concerning pet rabbit husbandry. Much of the discussion has involved the nutritional - dietary - requirements of pet rabbits. These notes will summarise the current recommendations of what to feed your rabbit.

The natural diet of rabbits

Rabbits are designed to eat grass, plus a bit of bark and other tough, fibrous materials. Letting your lawn grow wild and feeding it to your bun would suit your rabbit's digestive system (and teeth) down to the ground. Look at what makes grass such a perfect rabbit food and make sure you supply these characteristics in other food combinations.

- High fibre - at least 20%
- Moderate protein - around 15%
- Low fat - 2-3%
- Abrasive action on teeth
- Low in carbohydrates & little or no sugar

In addition to the proper diet you also need to ensure your rabbit has:

- Daily Exercise
- Adequate water intake

Pet bunnies need hay

The single most important item in the rabbit diet is grass HAY, and it should be fed in unlimited quantities to both adults and baby rabbits. Unlimited hay forms the basis of a healthy diet for your pet bunny. Good hay goes an awful long way towards meeting nutritional requirements and the rabbit's unique digestive system plugs many nutrient gaps. For example, extra protein can be manufactured from gut microbes and re-ingested in the caecotrophs.

Hay has other vital benefits. Nibbling hay for hours every day reduces boredom and behavioural problems. Chewing strands of hay exercises the teeth - the grinding movement is essential for maintaining dental health. Finally, a constant supply of long-strand fibre helps maintain healthy gut movement. This is why we feel hay is vital for any rabbit, even if you choose a commercial rabbit food that is labelled as nutritionally complete.

Grass that has been dried rapidly has been available for horses for many years and small animal feed manufacturers are now producing it for rabbits. Dried grass can be fed in addition to or instead of hay. One big advantage is that the quality of these dried grass products is more consistent than the hay sold in pet shops, some of which is abysmal.

The "Hay & Veggie" diet or commercial (Rabbit/Guinea Pig Mix) food?

A good quality rabbit pellet or mix DOES NOT contain dried fruit, seeds, nuts, and coloured crunchy things. Rabbits are strict herbivores, and in nature they rarely get fruit, nuts or other very rich foods. The complex flora of the caecum can quickly become dangerously imbalanced if too much simple, digestible carbohydrate is consumed--especially if the diet is generally low in fibre.

A good quality rabbit pellet or mix should have at least 18% crude fibre, around 15% protein, about 1-2% fat and about 1.0% calcium. Check the label on the rabbit pellets before you buy. Baby rabbits

should be fed unlimited quantities, as their bones and muscles need plenty of protein and calcium for proper growth. However, the calories and nutrients of commercial pellets fed ad libitum exceeds the needs of a healthy adult rabbit, and will not only promote obesity, but discourage the rabbit from consuming enough hay to ensure intestinal health.

The wise “bunny parent” will begin to gradually taper the quantity of pellets once the rabbit is about eight to twelve months old and feed no more than 1/4 cup per day for every 2kg of rabbit - or ***preferably NO commercial pellets or rabbit mix***. Some rabbit caregivers complain that their rabbits won't eat their hay. If the problem is not medical in nature (e.g., molar spurs are a common problem that can cause a rabbit to stop eating certain foods, including hay), then it may be that the rabbit is eating too many pellets, isn't hungry, and so doesn't eat the hay so vital to his/her health. Take the tough love approach! Cut back the pellets until you are sure your rabbit is eating enough hay! Commercially prepared foods make feeding pet bunnies a lot quicker and easier. They may be convenience foods, but chosen carefully and used sensibly (in limited quantities plus lots of hay!) they can form an integral part of a healthy diet for your pet rabbit. You need to understand the labelling before feeding a commercially prepared food - see the box for details.

Rabbit & Guinea Pig mixes of many varieties are available & fed to rabbits in Australia. *If you choose one of these mixes make sure your rabbit eats all of it - 'complete' foods are only complete if the rabbit eats every single bit of it.* Of course you can also feed greens, veggies or grass hay alongside commercial foods and end up half way to feeding the a “hay & veggie” diet anyway.

The “Hay & Veggie Diet” - consists of lots of hay plus a large and varied selection of greens and vegetables every single day. *This is undoubtedly the most natural way to feed your bunny and is highly recommended.*

Fresh Vegetables

These are probably as important as hay in maintaining a healthy intestine. Try broccoli, dark leaf lettuces, spring onions, capsicum, snow peas, parsley, coriander, carrots (with tops!), endive, dill, basil, mint, spinach, tomato, celery (cut up into pieces, to avoid problems with the tough strings) Almost any green, leafy vegetable that's good for you are good for a rabbit. Experiment and see which types your rabbit likes best! Rabbits love fresh, fragrant herbs fresh from the garden.

Baby rabbits may start receiving greens very gradually at the age of about two months. Add one item at a time, in small amounts, and if you see no intestinal upset, add another. Carrots and lettuce (not iceberg) are good starters. A 2kg adult rabbit should receive at least four heaped cups of fresh, varied (at least three different kinds each day) vegetables per day. Be sure to wash everything thoroughly to remove pesticide and fertilizer residues as much as possible. Even organic produce should be washed well to remove potentially harmful bacteria, such as E. coli. Serve the vegetables wet, as this will help increase your rabbit's intake of liquid. This, too, helps keep the intestinal contents moving well, and the bunny healthy.

Please don't make the mistake of serving less-than-fresh vegetables to your rabbit. A rabbit is even more sensitive to spoiled food than a human is. If the vegetables smell stale or “on the fringe”, they could make your bunny sick. Follow the Rule of Freshness when feeding your rabbit friend: “Don't feed it to Your Bunny if you wouldn't eat it yourself.”

Water

The importance of adequate water intake cannot be overstated. A rabbit that does not drink sufficient water will gradually begin to suffer desiccation of the intestinal contents. It seems that even when the tissues of the rabbit appear to be well hydrated, the intestinal contents may not be, perhaps because the rabbit is so efficient at sequestering necessary fluids from its own

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intestine. When this happens, the ingested food in the stomach and intestine becomes dry and difficult for the normal muscular motions to push through. This can start a downhill cascade into a condition known as ileus, which can be life-threatening if not recognized and treated.

A rabbit will usually drink more water from a clean, heavy crock than from a sipper bottle. We advise to provide both, but it's important to be sure that the crock, if made from porcelain, is lead free and that the water is changed daily and the crock washed thoroughly with hot water and detergent to prevent bacterial growth in the water source.

Fresh Fruit?

These are considered treats, and should be fed in very limited quantities, if at all. Safe choices are apple, apricot, banana, cherries, mango, peach, plum, papaya, pineapple, apricot, berries - just about any fruit you would like is okay for your bunny. Be very careful not to overdo these treat foods, as they may promote caecal dysbiosis, other intestinal problems and create a desire in the bunny to eat treats instead of his/her normal, healthy foods.

Exercise

All pet rabbits should have daily exercise outside of the hutch. We recommend at least 4 hours free roam exercise daily; preferably some of this should be outside. It is thought that exercise has an important part to play in ensuring a healthy gastrointestinal tract. Do not lock your bunny in a hutch all day!

Healthy treats

We all love biscuits, cakes and sweets - and some bunnies' do too. If we over-indulge in these things we just get fat: bunnies can become very ill. Excess sugars and starchy treats can wreak havoc with the sensitive population of bacteria in the gut. And sugar is no better for rabbit's teeth than for ours!

NEVER feed your rabbit commercial "gourmet" or "treat" mixes filled with dried fruit, nuts, seeds and sugar or molasses or Guinea Pig/Rabbit treat sticks. These may be safe for a bird or rodents - BUT THEY ARE NOT PROPER FOOD FOR A RABBIT. Unlike a human or a rodent (such as a guinea pig or rat), a rabbit is a strict herbivore in nature. Fed to a rabbit, the high fat and simple carbohydrate content of these "gourmet" products may contribute to fatty liver disease, result in caecal dysbiosis, foster obesity, and otherwise cause health problems. Some types of seeds (especially corn kernels) have hulls that are indigestible to a rabbit, and can cause life-threatening intestinal impactions.

The sole function of "rabbit gourmet treats" is to lighten your wallet. The manufacturers of these terrible products are not concerned about your rabbit's health and longevity, only selling you their product. Do not feed your rabbit biscuits, crackers, nuts, and seeds, breakfast cereals (including oatmeal or "high fibre" cereals) or other starchy snacks. These promote obesity, intestinal disorders and liver damage.

Stick to healthy treats - chunks of carrot or broccoli; perhaps a nibble of apple cores; carrot peelings; cauliflower stalks. These healthy treats can be fed frequently once your bun is used to them.

How much to feed?

You should aim for a bunny who isn't too fat or too thin; producing plenty of nice 'rabbit raisins'; with only very occasional smelly caecotrophs (shiny, dark night pellets) lying about. If you find lots of caecotrophs then you need to adjust the diet. Decreasing the commercial foods and increasing hay usually does the trick, but changing brands of food may be required. There are other causes of excess caecotrophs (obesity; reduced mobility; dental disease) but dietary problems are the most common. Excess caecotrophs are not diarrhoea.

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Young rabbits can be offered food ad lib until growth slows down around 4-6 months. After that, adjust food intake to suit the rabbit. Obesity is a serious health hazard to bunnies. A fat rabbit will not live as long as his slim siblings and will be a higher risk patient if surgery is required.

If you're a new rabbit owner it can be tricky to tell whether your bunny is the correct weight. When you take your bunny for his vaccinations, or to have his nails clipped (your vet will show you how to do this if you ask) in the early months of bunny parenthood it's a great excuse for a check up and to ask any questions!

SUMMARY

HAY

- Do choose hay carefully - hay fed to horses is usually good quality and can be obtained cheaply from feed stores.
- Don't feed hay that is dusty, or smells musty. Good hay smells sweet and is sometimes slightly green.
- Do store hay where air can circulate - not in plastic bags.
- Do try different hay for your bunny - some prefer soft grass hay, others seed hay which has a harder texture and often longer strands. Bagged hay sold in pet shops is often very poor quality and deficient in important nutrients - it's no wonder so many rabbits refuse to eat it!
- Don't feed too much Lucerne (alfalfa) hay if your bunny is overweight. The calcium content is too high for adult rabbits. It can be fed in larger quantities for juvenile rabbits.
- Do try straw or kiln-dried grass either in addition to hay for variety, or instead of hay if your bun is a fussy eater.
- Do put hay in the litter tray - rabbits like to munch when pooping!

Understanding rabbit food labels

Rabbit/Guinea Pig Mix (also called coarse mix) - Muesli-type mix of various ingredients. Popular with owners and some rabbits; wide selection available; possibly better chewing exercise for the rabbit than pellets, but this is not an issue if you're also feeding hay as you should be. If the rabbit only eats its favourite bits then selective eating becomes a problem and dietary imbalances can occur. This will also be an issue if you have two rabbits living together and each eats different components.

Rabbit Pellets - Some rabbit owners complain that pellets look "boring" which is a silly reason for rejecting a potentially good feeding option - after all, grass looks pretty boring to us but it's the best food for rabbits! Bunnies that are used to eating mix tend to turn their noses up at pellets, but they do eliminate the problems of selective feeding.

Extruded foods - All the advantages of pellets but with much greater palatability. Tends to increase water consumption. These foods are increasingly popular and available in most supermarkets and feed stores in Australia. Ensure they have high fibre, moderate protein & low fat - read the label! Example - Lovitt's rabbit food.

Understanding the bacteria in the rabbit gut

The rabbit intestinal tract is teeming with bugs - the entire functioning of their digestive system relies on a healthy population ("flora") of beneficial bacteria in the hindgut. If the delicate bacterial population becomes unbalanced, and 'bad bugs' multiply out of control, serious or even fatal diarrhoea can occur. This can occur if the rabbit is stressed or otherwise unwell; after some antibiotics; or especially after changes in the diet.

This is why you should never change your rabbit's diet suddenly - the bacteria need time to adapt to different foods. Take at least a week to switch between different brands of mix/pellets. Constant access to hay cushions dietary changes, but the fatal intestinal upsets commonly seen in bunnies purchased from pet shops are a grim reminder of the importance of going slowly when changing

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foods. Baby rabbits just can't handle sudden changes in diet just as their gut bacterial population is becoming established after weaning; and pet shop bunnies often undergo two changes of diet in quick succession.

Supplements & sunshine

Cast your eye along the shelves of the pet shop and you'll find selection of mineral licks and vitamin supplements. Many of you will be aware that calcium deficiency has been linked to dental disease in rabbits: it's not surprising that rabbit owners often give vitamin and mineral supplements to their rabbits not realising they could lead to more problems than they solve.

Rabbits do not routinely need a supplement. In fact, if a bunny is given extra calcium or vitamin D it doesn't need, it may run into problems with urinary stones, as it has to excrete the excess via the urinary tract. There is a place for vitamin/mineral supplements in bunnies who are selective eaters or who have established dental disease with poor bone quality. In these circumstances follow your vet's advice.

But what about sunshine? A paper in the Veterinary Record in England a few years ago by vet Frances Harcourt Brown showed that rabbits living loose outside had far higher levels of vitamin D than those living in hutches. What are the implications for house rabbits?

Rabbits, like people, obtain vitamin D (which enables the body to utilise dietary calcium) either from their diet or after exposure to sunshine. Full-time house rabbits, and rabbits confined to hutches don't have any opportunity to manufacture vitamin D from sunlight and must obtain all the vitamin D they need from their food.

This won't be a problem if your bunny is eating a sensible diet as described above - there's no evidence that a healthy bunny eating a decent diet is deficient in any vitamins or minerals at all. But if an indoor bunny is also a selective eater then you may run into problems. If you have such a rabbit and can't persuade him to eat a better diet then regular exercise outdoors in natural light will do much more for his physical and mental health than plugging the dietary gaps with a vitamin supplement, but you should talk to your vet for dietary advice.

Diet and dental health

Diet plays a crucial role in rabbit dental health. Most pet rabbits have some degree of dental disease, and most eat a poor diet. Bunnies who are selective eaters, refusing to eat the supplemented parts of a coarse mix, are often calcium deficient. But beyond that there's some controversy as to exactly what is going on.

One theory is that calcium deficiency is the primary problem - wild rabbits aren't calcium deficient, and have lovely skulls and teeth. The other is that wild rabbits have healthy teeth because their diet is based on grass, so their teeth wear down correctly and normal mechanical function is maintained in the back teeth. In fact, the two theories are not mutually exclusive: a calcium deficient rabbit will have poor bone quality, enabling the roots to push backwards into the jaw more easily once the jaw mechanics have gone wrong. Whichever theory you subscribe to, the conclusion is the same - a balanced, hay-based diet will tackle the problem.

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Dr Brendan Carmel from Warranwood Veterinary Centre, Victoria, based this article on information from various sources & clinical experience of treating rabbits in Australia. A large amount of the information in this article has been taken from 2 publications:

The Rabbit Welfare Fund, Rabbit Feeding Symposium
Dana Krempels, PhD, 'What should I Feed my Bunny?'

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