



Nutritional Requirements for Guinea Pigs:

Calcium and Vitamin C

Providing guinea pigs with the correct diet is an essential part of keeping these fun, loving creatures happy and healthy. Two extremely important nutrients that play a vital role in maintaining the health of guinea pigs are calcium and vitamin C.

Calcium

Guinea pigs obtain calcium through their food, therefore it is essential to provide them with a diet containing this mineral. However, their uptake of calcium is not well regulated by their hormone cycle so it is equally important not to give them food that is too high in calcium.⁵ Many dark green vegetables contain high amounts of calcium and should be avoided, or given only in small amounts and in moderation.¹

A very common reason guinea pigs present to the veterinarian is due to urinary stones. This is a common complication of excessive calcium in the diet.⁴ Urinary stones can be quite painful and may even require surgery if they become too large.¹

On the other hand, diets deficient in calcium have been found to increase the risk of guinea pigs developing fibrous osteodystrophy.^{5,6} Animals with this condition can have clinical problems due to poor bone quality, such as fractures and lameness.^{2,5}



Vitamin C

Similarly to humans, guinea pigs cannot make their own vitamin C so they require uptake of this nutrient through their food.

It is vital to ensure that pelleted diets bought from the store are marketed specifically for guinea pigs and contain vitamin C.⁵ It is also important to pay close attention to the packaged date and to replace old pellets with new ones about every six months because the vitamin C will break down over time.¹

In addition to commercially marketed guinea pig pellets, supplement the diet with certain vegetables high in vitamin C. Roots vegetables, such as carrots, and leafy greens, like kale, are excellent options for not only adding vitamin C to the diet, but they also function as environmental enrichment for the guinea pig.^{5,8}

Liquid vitamin C supplements that are meant to be added to a guinea pig's drinking water are commercially available, but they are generally not recommended. This is due to the fact that guinea pigs are known to be finicky and they may not drink the water once the supplement is added because of the change in taste.⁶

Vitamin C deficiency, also known as hypovitaminosis C or scurvy, affects the body's connective tissue, resulting in a variety of clinical signs, such as a rough coat, refusal to eat, signs of pain or reluctance to walk, swollen joints or feet, diarrhea, as well as sores or ulcers on their skin and/or gums.^{1,3} Hypovitaminosis C also affects the immune system which makes deficient guinea pigs more prone to developing other diseases, such as bacterial pneumonia and skin infections.^{3,8}

Of course, too much of a good thing can also be harmful. So it is important not to give too much vitamin C to a guinea pig as studies have shown this can exacerbate osteoarthritis.⁷

Also note that when changing a guinea pig's diet, do so slowly and gradually as these animals are known for developing food aversions.⁸ And remember, it is never too late to improve a guinea pig's diet!



References

1. Famini, D. (2021, February 2). Guinea Pigs and Other Rodents [Slides]. Canvas. <https://canvas.santarosa.edu/>.
2. Grünberg W. Fibrous osteodystrophy in animals. Merck Veterinary Manual Website. (2020, November). Available at <https://www.merckvetmanual.com/musculoskeletal-system/dystrophies-associated-with-calcium,-phosphorus,-and-vitamin-d/>.
3. Hess L, Axelson R. Health problems in guinea pigs. VCA Hospitals Website. Available at <https://vcahospitals.com/know-your-pet/guinea-pigs-problems>. Accessed February 22, 2021.
4. Hollingsworth JM. Low oxalate diet guidelines for kidney stone formers. University of Michigan Health System. Sep 2, 2014. Available at <http://www.med.umich.edu/1libr/urology/LowOxalateDietGuidelines.pdf>. Accessed June 9, 2021.
5. National Research Council (US) Subcommittee on Laboratory Animal Nutrition. Nutrient requirements of the guinea pig. In: Nutrient Requirements of Laboratory Animals: Fourth Revised Edition. Washington (DC): National Academies Press (US); 1995. Available at <https://www.ncbi.nlm.nih.gov/books/NBK231932/>. Accessed February 22, 2021.
6. Pignon C, Mayer J. (2021). Guinea Pigs. In: Quesenberry KE, Orcutt CJ, Mans C, Carpenter JW (eds). Ferrets, Rabbits, and Rodents. 4, 270–297. St. Louis: Elsevier; 2021: 270-297. doi: 10.1016/b978-0-323-48435-0.00021-6.
7. Vella D. Emergency presentations of exotic mammal herbivores. J Exotic Pet Med 21(4): 293-299, 2012. doi: 10.1053/j.jepm.2012.09.005
8. Witkowska A, Price J, Hughes C, et al. (2017). The effects of diet on anatomy, physiology and health in the guinea pig. Journal of Animal Health and Behavioural Science, 1(1). Available at <https://www.scholarscentral.com/pdfs/49135/the-effects-of-diet-on-anatomy-physiology-and-health-in-the-guinea-pig.pdf>. Accessed June 9, 2021.