

Companion Animal Hospital Exotic Animal Care



Insect-eating Reptile and Amphibian Nutrition

Insectivores are animals that eat insects and other arthropods. Captive insectivores require special attention to their nutrition, as commercially-available insects do not match the nutrition that a wild animal obtains from eating hundreds if not thousands of different prey species.

1. Gut-loading prey

Most commercially-raised insects are nutrient-poor until they have been fed a nutritious meal. This is partially for cost-effective insect breeding (they do not need optimal nutrition to breed in vast numbers), and partially because feeding nutrient-rich foods can affect their lifespan.

There are a number of gut-loading diets available commercially. Please consult with our staff for product recommendations. Most diets are recommended to be fed to insects for 24-48 hours before those insects are then fed to your reptile or amphibian.

Feeding cat and dog food as a gut-load is not recommended. While they are an excellent source of some nutrients, they are a significant source of cholesterol. Insects cannot synthesize their own sterol molecules (including cholesterol), and are not a common natural source of cholesterol unless they eat other cholesterol-containing animals. Dogs and cats need dietary cholesterol, but it can lead to serious health issues in insectivores that have not adapted to needing it in their diet.

Prey insects should always be kept in clean, well-ventilated containers to prevent mold growth. Feeding prey raised in moldy, unsanitary conditions will contribute to disease in your pet.

2. Supplements

Even with an excellent gut-load product, supplements are strongly recommended to ensure that your reptile or amphibian is getting balanced nutrition. Powdered supplements are dusted onto insect prey before they are offered to your pet. Because the powder can fall off in the enclosure, it is important to offer dusted insects when your reptile or amphibian is most active.

Arguably the most important supplement is calcium. Most insect species commonly fed as prey (including crickets, mealworms, superworms, and others) have very poor calcium content, and an inverted calcium-to-phosphorus ratio (Ca:P). This is the proportion of calcium and phosphorus in any food, an important value to consider as these two mineral nutrients have a close relationship. The target dietary Ca:P for insectivores is 1.5-2.0:1 (one and a half to twice

as much calcium compared to phosphorus). Few commercial insects naturally have this calcium content, so supplements are necessary.

It is recommended that every insect meal with naturally poor calcium content be dusted with a calcium supplement, unless you are feeding a very high-calcium gut-load meal to your insects. Calcium carbonate is the most common supplement form, and there should be no added phosphorus or vitamin D₃.

For insectivores that do not have any broad spectrum (UV-B) lighting, a calcium supplement with vitamin D₃ should be used regularly as this vitamin is necessary for calcium metabolism. Most reptiles and amphibians can manufacture their own vitamin D₃ from this special artificial light that replaces sunlight, and this is the safest way to provide vitamin D₃. Oral vitamin D₃ supplements can be used cautiously; over-supplementation causes vitamin toxicity which will lead to organ failure and death. There is very little data available on minimum vitamin D₃ requirements and how much is required to cause toxicity in the thousands of reptile and amphibian species. Using a calcium plus D₃ supplement is generally recommended every 5-10 meals; however this is only a general guideline. When UV-B lighting is available, there may be no need for oral supplementation. Note that no toxicity can occur from using UV-B lighting, and is much safer than “guessing” at oral D₃ supplementation.

A general multivitamin and mineral supplement can help ensure that your pet is not missing any micronutrients (nutrients that are needed in small quantities, and may not be found in every meal). Like with vitamin D₃-containing supplements, over-supplementation can cause toxicities.

Unfortunately, there are many products available in the pet industry that do not offer a guaranteed analysis of the nutrient content. Please consult with our hospital staff for product recommendations.