

Care Cards

Invertebrate Nutrition



Crickets come in various forms and are commonly fed to a variety of reptiles in captive situations. Some varieties of crickets include: the common house cricket (*Gryllus domesticus*), the commercial cricket (*Acheta domestica*), the Mormon cricket (*Anabrus simplex*), which is actually a wingless form of grasshopper, and the Jerusalem cricket (*Stenopelmatus*), also known as the “sand cricket”. Pinhead crickets are the tiny nymphal stages which are usually fed to smaller reptile species or juvenile species which cannot consume the larger adult crickets. Although there are a number of nymphal stages, they are often collectively referred to as pinheads. This article will review and compare various chemical compositions of crickets and evaluate their use as part of a high quality reptile diet.

Crickets, readily available in pet stores, are over utilized in reptile diets. Crickets by themselves are low in protein and calcium. Many pet stores do not feed the crickets prior to sale so there is less mess to clean. This practice results in low nutritional value. Commercial cricket foods are available which should be fed to the crickets for at least 48 hours prior to their use as a prey item. Crickets, however, should not be maintained on high calcium diets for extended periods of time. Nutrient requirement studies in crickets have shown that dietary calcium levels above 1366 ppm (14%) had deleterious effects on growth and reproduction.

Diets containing 8% calcium have been shown to raise the calcium level from 0.2% DM to 1.3% DM after being fed to adult crickets for 48 hours. This is important because normal cricket phosphorous levels are 2.6% DM. Calcium to phosphorous ratios of 1:1 to 2:1 are preferred for proper absorption and metabolism in reptiles. Unsupplemented adult crickets have a calcium to phosphorous ratio of 1:4. Interestingly, pinhead crickets have a much higher calcium levels between 1.3 and 2.3% DM, giving them a calcium to phosphorous ratio of 1.6:1. Dusting of crickets with a calcium supplement is commonly recommended. In one study crickets were dusted with a product containing 11% calcium and 3% phosphorous, using 1/8 teaspoon per 100 crickets. Immediately following dusting the crickets contained only 0.12% calcium. By 22 hours post-dusting the calcium levels were only 0.08%. Dusting is recommended to help prevent calcium deficiency in insectivorous reptiles, but it should be applied with care in its limitations appreciated.

All crickets have about the same water content, approximately 2/3 of the body mass. Adult crickets have a higher fat content as well as a higher total nitrogen level. Pinhead crickets have a higher protein level than adult crickets. House crickets have a higher fat content (54) and a lower protein level (40) than commercial crickets (44 and 50 respectively). Mormon crickets have the lowest protein content of all crickets.

Adult and pinhead crickets have similar levels of vitamin E, 85 and 75 respectively. Because there have been no documented cases of vitamin E deficiency in insectivorous reptiles, the vitamin E levels should be considered sufficient.

Vitamin levels in adult (820 Iu/Kg) and pinhead (480 Iu/Kg) crickets vary significantly. Both levels fall below the established requirements for domestic species. Insects have always been



many reptiles. Mealworms can be refrigerated in a container with air holes. They will become dormant and therefore last for several months.

Wax moth larvae are a good source of vital nutrients and are comparable, or in some cases superior, to other insects. The protein content of wax moth larvae can reach 24 percent. The fat content, although usually high compared to other insects, can be manipulated through starvation. Larvae have very low chitin levels and therefore are easier to digest than other insects such as mealworms and crickets.



Avoid feeding insects in contact with pesticides or herbicides. Although variations are found within each species, generally invertebrates, whether commercial or wild-caught, require supplementation with calcium. Diets fed to invertebrate prey should be balanced in energy and nutrition. Ground commercial dry pet food will sustain growth and reproduction in most insects. Water should be provided by moist slices of fruits and vegetables. Most insects will thrive in warmer temperatures, however rapidly molting insects like mealworms, will last longer if stored under refrigeration.



considered a poor source of dietary vitamin A. Many people have suggested that insects may have a lower dietary need for vitamin A.

Mealworms are commonly used as a food item; however their chitinous exoskeleton may affect their overall digestibility. This problem can be minimized by only feeding recently molted, white, soft worms. Do not overlook the pupae and beetles as food sources. Pupae can be offered to reptiles that rely on smell, instead of motion, to find their prey. Beetles are a natural part of the diet for

