



WHAT SHOULD SUGAR GLIDERS EAT?

Dan H. Johnson, DVM, DABVP (ECM)
Avian and Exotic Animal Care, Raleigh, NC

Sugar gliders (*Petaurus breviceps*) are small, nocturnal, arboreal marsupials native to New Guinea and the eastern coast of Australia. Sugar gliders are omnivorous, and their wild diet includes carbohydrate-rich sap and gums from eucalyptus and acacia trees, nectar and pollen, manna and honeydew, and a wide variety of insects and arachnids. They possess specialized lower incisors for chewing and gouging into tree bark, a lengthened fourth digit on the manus for extracting insects, and a large cecum presumably for the microbial fermentation of complex polysaccharides in gum. Despite our current detailed knowledge of sugar glider natural history and the fact that gliders have been kept as pets for a number of years, many companion gliders still present for veterinary care with problems related to improper feeding, including malnutrition, obesity, osteodystrophy, and dental disease.

Behaviorally and morphologically, sugar gliders should not be considered insectivores. Glider teeth are designed to compress, not shear, insects. Sugar gliders have a relatively low nitrogen (protein) requirement, and excessive protein may, in fact, be detrimental to overall health. Gliders extract the nutrients within hemolymph and soft tissues of arthropods, and discard the less digestible, hard exoskeleton. Their digestive tract comprises a fairly simple small intestine for protein and sugar digestion and a large cecum for possible microbial fermentation of complex carbohydrates (gums). Sugar gliders are remarkably adaptable, and their diet in the wild is highly correlated with resource availability. Wild sugar gliders will consume both plant- and animal-based foods, depending on locale and season. During spring and summer, wild gliders feed on insects and spiders 40% to 60% of time, even though exudates (tree saps and gums) are more abundant during this period. During autumn and winter, gliders spend more time consuming gum (polysaccharides produced by trees in response to insect and mechanical damage), sap, honeydew (a sugar-rich, sticky liquid secreted by sap-eating insects), and manna (a sweet, mucilaginous secretion produced by plants in response to insect damage). Saps and gums are consumed throughout the year and form the sugar gliders' staple diet.

Many diets have been recommended for captive sugar gliders. The internet is littered with a dizzying array of sugar glider diets, both homemade and commercial. Some say that their diet provides all that a sugar glider requires, while others insist that there is NO sugar glider diet that can be fed as the sole diet. An artificial nectar mix originally formulated for the Leadbeater's possum ("Leadbeater's diet") is used by many as a staple diet for the sugar glider. The original Leadbeater's recipe is often modified, with adjustments usually being made for palatability rather than nutritional content. Bourbon's Modified Leadbeater's diet (BML), Judie's BML diet, and High Protein Wombaroo diet (HPW) are just a few examples. Various diets have been manipulated to reduce the

musky odor associated with sugar glider urine. Veterinarians should carefully scrutinize any diet to ensure that it is complete and balanced.

While no commercial or home-made diet or combination has undergone thorough nutritional dietary trial and analysis, what most experts agree upon is this:

- Captive diet should include nectar, insects, and other protein sources, as well as very limited amounts of fruits and vegetables.
- About 50% of the diet should consist of plant sugars, preferably in the form of sap or nectar (fresh nectar, maple syrup, honey, and artificial nectar products). Commercial nectar mixes include lory diets such as Lory Life (Avico Specialty Products) and Nekton Lory (Nekton Products, Germany), and the glider nectar Glideraid (Avico Specialty Products). Leadbeater's diet is considered by most experts to be a reliable home-made nectar replacement. Gum Arabic (acacia gum) is a commercially available tree gum substitute for gliders which is rich in calcium and complex carbohydrates (polysaccharides).
- The remaining 50% of the diet should be made up of insect and animal protein (commercial insectivore diet, high-quality carnivore diet, newborn mice, day-old chicks, insects, eggs, meat,). Properly balanced dry or canned commercial protein products that also include essential vitamins and minerals (insectivore diet, cat food, dog food, primate diets) are superior to protein sources comprised of unsupplemented animal products, such as meat, eggs, and insects. To prevent calcium deficiency, live adult insects (crickets, Dubia roaches) should be "gut-loaded" (fed a calcium-rich diet) before being offered to gliders, and larval forms (mealworms, wax worms) should be kept to a minimum.
- In spite of published advice to the contrary, wild sugar gliders do not rely heavily on fruit, vegetables, nuts, grains or seeds. Fruit-based diets are harmful to captive sugar gliders because they provide inadequate protein and calcium and predispose animals to osteoporosis and periodontal disease. Pet gliders will readily accept these items to the exclusion of healthy foods, and may experience malnutrition as a result.

For their body size, sugar gliders have a relatively low metabolic rate. Captive sugar gliders typically require only 25 to 35 grams of food per 100 grams of body weight daily. A typical daily ration for one sugar glider might consist of 15 g of Leadbeater's diet or other nectar, 15 g of insectivore/carnivore diet and/or gut-loaded insects, and about 2.5 g of "treat foods" (fruits, vegetables, bee pollen, insect larval forms, occasional seeds/nuts). Food should be offered in the evening, and fresh water should be available at all times.

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