

WOMBAROO

FEEDING GUIDELINES FOR SUGAR GLIDERS

These guidelines largely rely on using Wombaroo High Protein Supplement™ (HPS™) to provide the essential protein, fatty acids, vitamins & minerals in the diet.

The addition of other nutritional supplements or high energy foods is not recommended as this can severely affect the balance of nutrients in the diet. However there is plenty of scope for variation within the food types presented in the diet as outlined in the accompanying notes.

The diet is based on a 130g adult animal at maintenance (basal metabolic rate^{1,2} x 2.5) with a calculated energy requirement of approximately 113kJ/day.

Approximate feed proportions of diet are:

	Daily Feed amount per animal	Proportion of diet (as fed basis)
Fruit & Vegetables (supplemented with HPS™ powder)	20g diced Fruit & Veg with 2g of Wombaroo HPS™ (1 level teaspoon) dispersed over it.	75%
Plain Biscuit (supplemented with HPS™ solution*) OR Nectar Shake 'n' Make	5g plain Biscuit/Cookie (e.g. 1/2 a tea biscuit) with 2ml of Wombaroo HPS Solution* poured over it.	15%
Small Carnivore Food™	2g (1 level teaspoon) of prepared Wombaroo Small Carnivore Food™ made up as a moist crumble.	7%
Live Food	1g mealworms, crickets or other invertebrates.	3%

* Wombaroo HPS Solution is made by suspending 1 part HPS™ powder (25g) into 3 parts warm water (75ml) and mixing well.

Approximate analysis of the above diet (dry basis):

Energy	17.5MJ/kg
Protein	20.0%
Fat	11.0%
Calcium	0.50%
Phosphorus (available)	0.34%
Ca/P ratio	1.5

For breeding or growing animals increase the amount of Wombaroo HPS™ or Small Carnivore Food™ by 50%.



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NOTES

Fruit & Vegetables (75% of diet)

These are offered as a major carbohydrate (energy) source in the diet. Sugar Gliders are able to readily digest both simple sugars and complex carbohydrates⁴. Fruits tend to be more palatable than vegetables due to higher sugar content. We generally feed about 75% fruit and 25% vegetables but this can vary based on seasonal availability and animal preference. A large variety of fresh fruits may be accepted including (and not limited to) berries, apple, pear, citrus, stone fruits, rockmelon (cantaloupe) with seeds, paw paw (papaya) with seeds. Likewise an assortment of vegetables may be offered including cucumber with seeds, sweet potato and grated carrot. As long as these foods are supplemented with the recommended amount of **Wombaroo High protein Supplement (HPS)** then all essential nutrients are properly balanced. There is little need to be concerned about the calcium to phosphorus ratio of individual food items as this is balanced out by the addition of the **HPS™**.

HPS Solution with Plain Biscuit/Cookie (15% of diet)

This provides another energy source, which uses the biscuit as “vehicle” for the liquid **HPS™** solution. The **HPS™** solution may also be used as the basis of an artificial nectar diet which can be made more palatable by the addition of honey, blended fruit or juice. If using these other food items (which are high in carbohydrate) then the amount of biscuit can be reduced accordingly or removed altogether. Alternatively one can also use **Wombaroo Nectar Shake 'n' Make™** as a nutritionally balanced nectar diet.

Small Carnivore Food & Live Food (upto 10% of diet)

Wombaroo Small Carnivore Food™ is used as a live food (insect) replacement. Effectively our suggested diet can use either **Small Carnivore Food** or “**Live Food**” or a combination of both. The **Small Carnivore Food™** has the advantage that it is fully balanced with vitamins & minerals, whereas insects are generally deficient in calcium. However live insects are a natural part of a Sugar Glider's diet and are a favoured food which offer behavioural enrichment. When feeding insects it is important to offer a variety as feeding one type alone may be nutritionally deficient. The larval stage of insects (eg mealworms, fly pupae) tend to be higher in fat, so should only be used as a treat. Adult stage insects (eg crickets, moths, cockroaches) have a higher protein content and are therefore provide a better source of nutrition in a captive diet. In all cases feeder insects can be fortified by growing them on a nutritional substrate such as **Passwell Insect Booster™**. It is interesting to note that sugar gliders also feed on spiders in the wild. Spiders contain elevated levels of the sulphonic amino acid taurine, which may be particularly beneficial in the growth and development of young gliders. Both **Wombaroo HPS™** and **Small Carnivore Food™** contain added levels of taurine.

Blossoms & Foliage

It is also recommended to provide as much native (Australian) blossom and foliage as possible (eg eucalypt, acacia, callistemon, grevillea, banksia). Larger branches of eucalypt are also beneficial to stimulate natural foraging behaviour such as chewing of bark.

Pollen

Pollen from native plants is a natural part of the diet and is often consumed by gliders in conjunction with nectar³. However most commercial forms of pollen (ie Bee Pollen) are harvested from bees and are not nutritionally equivalent to the native plant pollen consumed by gliders (bee pollens are large agglomerations of pollen grains bound together with carbohydrates). As a result, bee pollen is significantly less digestible and offers little additional nutritional value to captive gliders already being fed a balanced diet. The range of amino acids, vitamins and minerals found in plant pollen are also contained in **Wombaroo HPS™**, so we believe the addition of pollen to this diet is unnecessary.

Iron Storage Disease

Excessive dietary iron can induce Iron Storage Disease (ISD), which is the accumulation of iron in body organs and tissues. In prolonged cases ISD can lead to organ failure and death. Some nectarivorous and frugivorous species are prone to ISD, and these species normally have low levels of iron in their natural diet. Although iron storage disease has not been widely reported in sugar gliders, evidence of tissue iron deposition has been seen in gliders at necropsy⁴. Many commercial human foods (eg baby foods) and supplements are fortified with iron and these should be avoided when feeding sugar gliders. Some commonly fed glider “recipes” may contain excessive iron content⁴. **Wombaroo High Protein Supplement™** contains less than 40ppm Iron and thus provides safe levels of iron in the diet.

REFERENCES

1. Dawson TJ, Hulbert AJ (1970). Standard metabolism, body temperature, and surface areas of Australian marsupials. *Am J Phys* 1970;218:1233–8.
2. Nagy KA, Suckling GC (1985). Field energetics and water balance of sugar gliders, *Petaurus breviceps* (Marsupialia: Petauridae). *Aust J Zool*;33:683–91.
3. Smith AP. (1982) Diet and feeding strategies of the marsupial sugar glider in temperate Australia. *J Anim Ecol*;51:149–66.
4. Dierenfeld E.S. (2009) Feeding Behaviour and Nutrition of the Sugar Glider (*Petaurus breviceps*). The veterinary clinics of North America Exotic animal practice Volume: 12, Issue: 2, Publisher: Elsevier Ltd, Pages: 209-15, xiii-viii.