

Fact Sheet

Application of a Dry, Manufactured Diet for Multiple Lory Species

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Introduction

Lories, lorikeets, and other psittacines that include plant pollen and nectars as a portion of their natural diets have historically been offered liquid nectar solution (LNS) diets as some portion of a captive feeding program. Although readily accepted by these species, LNS diets are nutritionally dissimilar to foods consumed by free-ranging individuals, primarily due to high moisture content and subsequent nutrient dilution.

The high fluid intake associated with consumption of LNS diets results in excretion of high moisture feces, which can contribute to environmental contamination and increase the potential for spread of pathogenic organisms. Under typical feeding conditions, LNS diets provide an excellent media for microbial growth. As such, use of LNS diets requires one large feeding provided in a prescribed timeframe and/or distributing feedings in small amounts, and replacing uneaten quantities throughout the day to prevent overgrowth of food-borne bacteria and yeasts.

An entire collection of lories, lorikeets, and similar species was converted to a dry commercially available lory powder (DLP) diet (Marion Zoological, Inc., Plymouth, MN) in an attempt to:

1. Incorporate a nutritionally complete diet for psittacines formulated based on available information on the nutrient requirements of these species.^{1,2}
2. Remove food safety concerns associated with offering a LNS diet.
3. Reduce labor associated with appropriate feeding of a LNS diet.

Materials & Methods

The importation of 48 lories, lorikeets, and hanging parrots, representing nine species (Table 1), and a prolonged quarantine period allowed controlled monitoring of all birds during the diet transition. Food intake was documented for one week, beginning with the first presentation of DLP diet. At this time, a reduced portion of LNS diet was also offered in conjunction with remaining diet components. Body weights (BW) were recorded for a minimum of six months post diet transition.

The final goal was to determine appropriate amounts of diet items to be offered to three size classes of the above-mentioned species. Therefore, food intake was quantified by measuring food disappearance from the pan. Orts were not collected from the enclosure floors. In a practical feeding situation, this component constitutes the waste generally associated with the feeding behavior of psittacines.

Results & Discussion

Psittacines that include plant pollen and nectars as a component of their natural diet have relatively long tongues equipped with papillae-like structures. Offering a DLP diet provides a means for birds to use a natural feeding behavior (pollen collection), while greatly reducing the absolute quantity of moisture in the diet. Moisture content of diets offered to the various collection species was reduced by an average 45%.

Overall, acceptance of the DLP was high, both during and post-transition. The diet quantities formulated for the three size classes were based on dry matter intake (Table 2) and nutrient content (Table 3) and proved adequate for most species. Depending on enclosure size activity level and propensity for obesity there were a few exceptions. Sangi red and blue lories (*Eos histrio histrio*) demonstrated an 18% increase in BW six weeks post diet transition, which led to diet manipulation. Mount Apo lorikeets (*Trichoglossus johnstoniae*), BW = 50g, required a "medium lory" diet to maintain BW.





Marion Zoological
Lory Powder.

Suggestions To Facilitate Transition To DLP Diet:

1. Acclimate birds to a reduced quantity of concentrated LNS (increase solids by 50%).
2. Offer a measured quantity of DLP in a feed container that can be anchored near the water source. Birds will begin by sampling the powder and then dipping tongue in water.
3. Monitor water quality, fresh water may be required after the main AM feeding bout.
4. Continue to reduce nectar to encourage consumption of DLP, as long as birds are maintaining BW and there is evidence DLP is consistently consumed. Even large birds (BW > 200g) are unlikely to consume more than 10g, or one tablespoon, of DLP.
5. Once birds are transitioned to DLP, the product can be offered in the feed pan with other diet items.
6. If transition is not successful, DLP can be sprinkled over produce portion of diet.

Conclusions

1. Incorporation of a dry lory powder (DLP) diet into the captive feeding program of lorries, lorikeets, and similar species can provide a nutritionally superior diet, in part, due to the reduced moisture content. Offering a DLP diet provides a means for birds to use a natural feeding behavior (pollen collection).
2. Food safety concerns are reduced by removal of liquid nectar solution (LNS) diets, which provide an excellent media for microbial growth.
3. Birds acclimated to a DLP diet can be fed once a day, thus reducing the labor required for appropriate feeding and enclosure maintenance when LNS diets are fed.

Literature Cited:

1. Koustos, E.A., K.D. Matson, and K.C. Klasing, 2001. Nutrition of birds in the order of psittaciformes: A review. *J. Avian Med. Surg.* 15(4):257-275.
2. Ullrey, D.E., M.E. Allen, and D.J. Baer, 1991. Formulated diets versus seed mixtures for psittacines. *J.Nutr.* 121:S193-S205.

Table 1

Lory, lorikeet, and hanging parrot species received, Zoological Society of San Diego quarantine, 2001.

| Size Class | Scientific Name | Common Name |
|---------------------|---|--|
| Small (30-60g) | <i>Loriculus philippensis philippensis</i> <i>Trichoglossus johnstoniae</i> | Luzon Hanging Parrot Mount Apo Lorikeet |
| Medium (65-150g) | <i>Chamosyna papou goliathina</i> <i>Eos semilarvata</i> <i>Psitteuteles iris iris</i> <i>Trichoglossus haematodus mitchelli</i> <i>Trichoglossus haematodus rubritorquis</i> | Mount Goliath Lorikeet Blue-eared Lory Iris Lorikeet Mitchell's Lorikeet Red-collared Lorikeet |
| Large (155-275g) | <i>Eos historio historio</i> <i>Lorius domicella</i> | Sangi Red & Blue Lory Purple-naped Lory |

Table 2

Average dry matter (DM) intake^a of 48 lorries, lorikeets, and hanging parrots, representing nine species, during transition from prepared nectar to dry lory diet.

| Size Class | Average Intake ^a (g DM/d) | Range of Intake (g DM/d) | Average Intake ^a (g DM/g BW) | DM content of standard diets (g) |
|---------------------|---|-----------------------------|--|--|
| Small (30-60g) | 13 | 9-17 | 0.28 | 14.8 |
| Medium (65-150g) | 23 | 20-28 | 0.24 | 29.3 |
| Large (155-275g) | 42 ^b | 23-60 | 0.21 | 36.0 ^b |

^a Intake = food disappearing from pan. Orts were not collected from the ground.

^b Birds were offered quantities of food in excess of final diets during the period of date collection.

Table 3

Selected nutrient analysis (DM basis) of average diet offered to lorries, lorikeets, and similar psittacines maintained by the Zoological Society of San Diego.

| Dry Matter | Crude Protein | Crude Fat | Crude Fiber | Total Sugar | Ca | P |
|------------|---------------|-----------|-------------|-------------|--------|-------|
| 20.6% | 14.3% | 3.9% | 4.4% | 37.3 | 0.068% | 0.43% |

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