

CONVERSION OF SIX DOMESTIC FERRETS (*Mustela putorius furo*) FROM COMMERCIAL CAT FOODS TO A COMMERCIAL DOMESTIC FERRET FOOD: A FOOD ACCEPTANCE TRIAL

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INTRODUCTION

For years the Philadelphia Zoo struggled to find a simple, palatable diet for the domestic ferrets (*Mustela putorius furo*) in the Philadelphia Zoo collection. The ferrets are used in the zoos education program and housed at the Children's Zoo. Many of the animal caretakers at the Children's Zoo are volunteers; thus, the animals are cared for by a number of different people. For this reason, the diets for animals housed at the Children's Zoo must be simple to ensure consistent feeding practices by all animal caretakers. The Philadelphia Zoos base diet for the ferrets was a combination of dry and canned commercial cat foods. To entice the animals to consume this combination of food yogurt as well as other dietary augments were frequently needed. The dietary components for each animal's diet had been derived through trial and error in food acceptance. Actual feeding practice was inconsistent.

In the early 1990s the zoo tried several commercial ferret foods in an attempt to simplify the diet. None were accepted by the Philadelphia Zoo ferrets. We speculate that the brands tried were formulated for mink rather than ferrets, and assume that the fish products found in these diets were the probable reason the diets were unpalatable by the ferrets. By the summer of 1998 persistent weight problems (both obesity and underweight) as well as confusion concerning dietary amounts and permitted augments led the zoo to again look for a simple, palatable commercial diet. Totally Ferret, a commercial diet manufactured by Performance Foods, Inc. for domestic ferrets, was chosen by the Philadelphia Zoo because of the food's reported acceptance and success amongst ferret breeders and enthusiasts. Additionally, Totally Ferret was confirmed by the manufacture to provide all the nutrients required by ferrets through successful feeding trials for all life stages (Willard, 1994).

The purpose of this trial was to test the acceptance of the commercial diet Totally Ferret by the ferrets in the Philadelphia Zoo collection. Nutritional adequacy of Totally Ferret had already been confirmed by the manufacturer for the target species. No attempt was made to compare nutritional adequacy of the original diet to the commercial diet. The original diet was deemed unsuitable for management reasons alone.

A 13 day acceptance trial was run at the Philadelphia Zoo in order to determine if the Philadelphia Zoo ferrets would readily consume a diet comprised solely of Totally Ferret.

MATERIALS AND METHODS

A 13 day diet conversion was conducted at the Philadelphia Zoo from 10 August to 23 August 1998. Six (5.1) neutered, healthy, mature, captive bred domestic ferrets (*Mustela putorius furo*) were gradually switched from a diet of canned Zu-Preem Feline (Premium Nutritional Products, Inc. of Mission, KS) and Purina Cat Chow (Ralston Purina Company of St. Louis, MO) to a diet consisting solely of Totally Ferret (Performance Foods, Inc. of Dayton, OH). All foods were presented to the ferrets in 3 to 5 inch diameter, 1 inch depth ceramic animal feed dishes. The original diet and commercial diet were presented concurrently in separate dishes. Animals were housed in individual holding cages for feeding. Fresh water was always available.

From August 10 to 11, each ferret received a combined diet of 10 grams Zu-Preem Feline and 15 grams Purina Cat Chow, with 5 grams of Totally Ferret in a separate bowl. From August 12 to 14 each ferret received 6 grams of Zu-Preem Feline, 10 grams of Purina Cat Chow, and Totally Ferret was increased to 15 grams. From August 15 to 17 the amounts of Zu-Preem Feline and Purina cat chow were reduced to 4 and 7 grams respectively and the amount of Totally Ferret was raised to 25 grams. The following three days, August 18 to 20, Zu-Preem Feline was eliminated entirely from the diet and Purina Cat chow was reduced to 5 grams, while Totally Ferret was increased to 30 grams. Beginning the twelfth day (August 21), Purina Cat Chow was eliminated from the diet and the ferrets were given 40 grams of Totally Ferret as their only diet item (Table 1).

Throughout the diet conversion, keepers weighed (in grams) each dietary item offered prior to feeding. Orts (leftovers) were collected and weighed back the following day prior to the next feeding. All data was collected daily for each animal included in the study for 13 days. For 21 days post conversion intake data was estimated visually by the keepers, and reported via the daily general keeper report. The intake data collected from the daily reports was compared to the same intake data collected from the daily reports for the three years prior to the diet conversion. This aided in evaluating the daily intake of the new diet Totally Ferret as compared to the old diet (Zu-preem Feline and Cat Chow) post trial.

TABLE 1. Food allotment offered daily during a 13 day diet conversion for each domestic ferret (*Mustela putorius furo*) switched from commercial cat foods to Totally Ferret, a complete ferret diet (as fed).

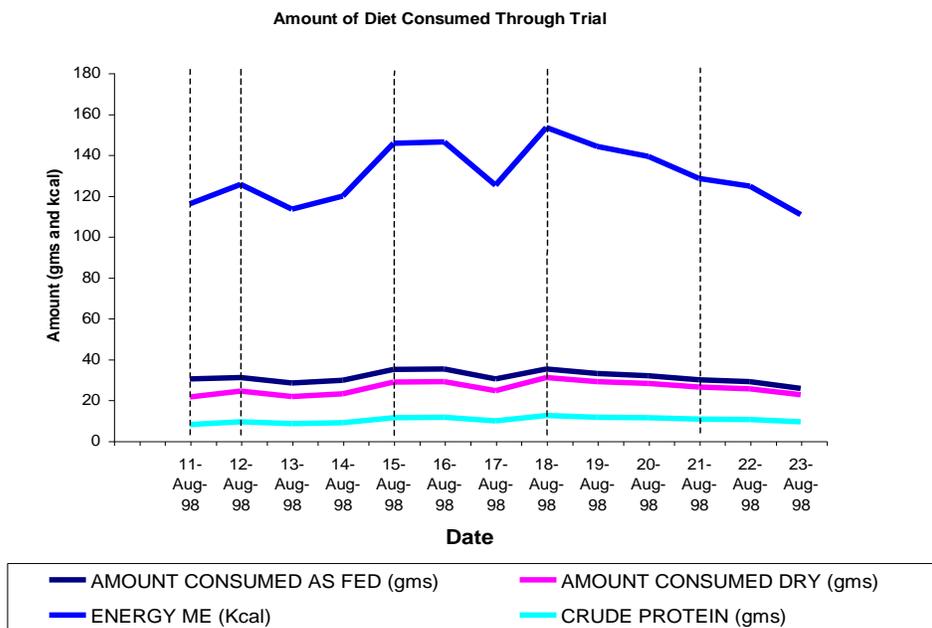
FOOD TYPES	10-11 AUG	12-14 AUG	15-17 AUG	18-20 AUG	21+ AUG
Zu-preem Feline (gms)	10	6	4	0	0
Purina Cat Chow (gms)	15	10	7	5	0
Totally Ferret (gms)	5	15	25	30	40

RESULTS

The conversion from cat food to the commercial ferret diet, Totally Ferret, was successful. Palatability of Totally Ferret for ferrets accustomed to cat foods is good and it is possible to convert ferrets to Totally Ferret in a short period of time. No dietary augments were needed to improve the palatability of Totally Ferret for the animals included in this trial.

While the purpose of this trial was to determine the acceptance of the Totally Ferret diet, the level of energy, protein and dry matter consumed during the course of the trial by the ferrets was monitored (Graph 1). Nutrient intake was calculated from the Guaranteed Analysis provided by the manufacturer of each diet ingredient (Table 2). Energy intake rose during the time both the original diet and Totally Ferret was offered. By the end of the trial the level of energy consumed by the animals was very near the level consumed at the beginning of the trial as were the levels of protein and dry matter.

Graph 1. Average nutrient intake for six domestic ferrets (*Mustela putorius furo*) during the 13 day diet conversion.



Note: Data for August 10 missing due to a data collection error.

Table 2: Nutrient information provided by the manufactures of each feed used in feeding trial

Feed	Totally Ferret		Purina Cat Chow		Zu-preem Feline	
	As Fed	Dry	As Fed	Dry	As Fed	Dry
Dry Matter %	88		88		36.7	
Energy (ME) kcal/100 gm	431	489	472	536	228	621
Crude Protein %	36	41	30	34	16	43.6
Fat %	22	25	11*	12.5	16	44
Ash %	NI	NI	7.5	8.5	2.6	7.1

* minimum

DISCUSSION

The conversion of six ferrets accustomed to commercial cat foods to Totally Ferret was successful. All animals were converted to the new diet within the time frame of the trial and without dietary augments such as yogurt or fruit juice which had been necessary to entice consumption of the commercial cat foods fed prior to the conversion. A review of recorded diet intake information for the three years prior to the diet conversion showed that all animals included in this trial either continued to feed at the same level or consumption of the offered diet improved after the conversion. (Table 3). Keepers estimated consumption to confirm the diet was consumed by all animals.

We believe the results of this trial demonstrate that domestic ferrets accustomed to commercial cat foods can be converted to Totally Ferret, a diet specifically formulated to meet the nutritional needs and taste preferences of domestic ferrets (Willard,1994), within a very short period of time.

Table 3. Visual estimates of pre- and post-feeding behaviors of six domestic ferrets (*Mustela putorius furo*) switched from commercial cat foods to a commercial ferret food.

FERRET	BEFORE DIET CONVERSION	AFTER DIET CONVERSION	CONCLUSION
FRODO	Usually ate about 1/2 of diet offered.	Is now eating about 3/4 of diet offered.	Eating better.
HANSEL	Usually ate about 1/2 of diet offered.	Is now eating about 3/4 of diet offered.	Eating better.
GRETEL	Usually did not eat or ate 1/2 of diet.	Is now eating about 3/4 of diet offered.	Eating better.
FELIX	Usually did not eat or ate 1/2 of diet.	Is now eating about 1/2 to 3/4 of diet.	Eating same to better.
DEVON	Usually ate about 1/2 of diet offered.	Is now eating about 1/2 of diet offered.	Eating the same.
EMMET	Usually did not eat or ate 1/2 of diet.	Is now eating everything offered.	Eating much better.

* All information was taken from daily keeper reports since 1995.

CONCLUSIONS

1. Totally Ferret is palatable to domestic ferrets accustomed to commercial cat foods.
2. Ferrets can easily be converted from commercial cat foods to Totally Ferret in a short period of time.
3. No dietary augments are required to entice ferrets accustomed to commercial cat foods to eat Totally Ferret.

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REFERENCE

Willard, Thomas R. Feeding Results of *Totally Ferret* on Pet Ferrets. Presented at Sixth Annual Small Mammal – Reptile Medicine and Surgery for the Practitioner. Middleton, WI, 1994.